

3/17/2011 EPA DATA Requests

222-S

- 1) Copy of 3/17/2011 Presentation
 - 2) Tank Assessment done in 1999
 - 3) Supporting closure documentation for Tank 103 in 219S (ex.: procedure to close, Agreements with Ecology; work package, etc.)
 - 4) Supporting documentation regarding sump release 9, tank 104 (ex: detection data, reported info, repair data, how it was addressed)
 - 5) Type of corrosion protection, 2 years of inspection records, and any type of integrity assessments that may exist for underground line at 219-S
 - 6) Information on sodium hydroxide tank in 219S (documentation on pump out; qnty of water in tank; etc.)
 - 7) Procedures LA-378-104; LA-523-138; LA-533-115; LA 506-102
 - 8) Completed Example of 222S Waste Transfer sheet, slurp and pour
 - 9) Most recent lab pack (RM 4S), including when particular waste went out
 - 10) Most recent analytical results for Tank 102
 - 11) January 2009 to present mixed waste log *and* January 2010 to present weekly inspections for 90-day mixed low level room
 - 12) January 2010 to present weekly inspection records for 90-day dangerous waste area
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- 6) Information on sodium hydroxide tank (Tank 201) in 219S (documentation on pump out; qnty of water in tank; etc.):

Please see attached discussion.

- 6) Information on sodium hydroxide tank (Tank 201) in 219S (documentation on pump out; qty of water in tank; etc.):
- a. Tank 201 in the 219S Operating Gallery is a product tank used to hold a sodium hydroxide solution for treating the contents of Tank 102 prior to transfer to the DST System. Tank 201 has held neither RCRA waste nor radioactive material and is not radiologically contaminated. Tank 201 is a single walled product tank that is discussed in but is not part of the 222S TSD, as discussed in the Part B application.
 - b. 222S Operations emptied 219-S Tank 201 in March 2010 as part of treating Tank 102, in accordance with 222S procedure ATS-LO-100-162. After the Tank 201 was emptied, 570 gallons of water was added to the tank to dissolve the sodium hydroxide residue and keep it in solution for a scheduled caustic flush. For waste minimization purposes, the Tank 201 caustic water will be transferred to Tank 102 and will be used as part of the caustic flush water of the Tank 102 and pipeline to the DST System (per procedure TO-430-080, steps 4.3.4 and 5.7.18). The next transfer of the current contents of Tank 102 to the DST system is scheduled for March 30, 2011.
 - c. The 222S waste addition procedure adds a caustic flush following completion of waste additions at the point of entry to the 219S Tank System (i.e., at the 2B Sink using ATS-LO-100-171). This greatly reduces the volume of sodium hydroxide solution required to be on hand to treat Tank 102 to meet the DST waste acceptance criteria. The smaller volume of sodium hydroxide needed to treat Tank 102 can easily be met by mixing it on a batch-by-batch basis in the 55 gallon container that drains directly into Tank 102; the 55 gallon container is kept empty when not in use. As a result of this minimization effort, Tank 201 is no longer needed to store the relatively large volumes of sodium hydroxide solution in the 219S Operating Gallery. Not storing sodium hydroxide in the 219S Operating Gallery in Tank 201 will significantly reduce the inventory of hazardous materials maintained at 222S.

Documentation provided:

1. Procedure ATS-LO-100-162, *222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102*
2. Procedure TO-430-080, *Transfer from 219-S Tank 102 to 241-SY-101* (see especially steps 4.3.4 and 5.7.18)
3. Procedure ATS-LO-100-171, *222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System*

222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

222-S Laboratory Laboratory Operating Procedure

Technical Authority: HL Baune

Review Designation: E,S,R

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

Revision Status

Rev/Mod	Issue Date (Released for Training)	Effective Date Released for Use)	Pages	Description
L-0	NA	02/13/2008	4, 12, 13, 15	Update organization titles and records box; revise placement of Warning; add Note for neutralization; review for critical tasks (none per TA)
M-0	12/29/2008	01/05/2009	All	Update procedure for HMI based on PrHA; implement TFC-MD-061 organization changes
M-1	NA	12/14/2009	Various	Administrative/editorial change to update Tank Operations Contractor (TOC) organizational elements of management directive TFC-MD-061, which also serves as authorizing change mechanism for this revision.
N-0	01/06/2011	01/06/2011	Various	Rename Reference Section to Sources and add sub steps. Revise Records Section format. Remove J designator. Added steps for rinsing of sampling line. Completed periodic review.

222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

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1.0 PURPOSE AND SCOPE

This procedure provides the instructions for treating the radioactive liquid wastes stored in 219-S Tank 102. This procedure also provides the methods to obtain the samples needed for analyses before shipping to the Tank Farms (TFs). The analytical results are used to ensure the waste to be shipped is within the parameters of the applicable waste profile sheet.

The waste collected in the 219-S Tank 102 must be analyzed to meet transportation and TF specifications, whether it is transferred by pipeline or tanker truck. The tank contents also must be made alkaline and treated with sodium nitrite (NaNO_2) to protect the tanks and lines. To achieve this, a sample of the contents is analyzed by the laboratory to determine the sodium hydroxide (NaOH) required to be added to the tank to bring it to a pH between 12 and 14 and the amount of NaNO_2 to be added to make the molarity greater than 1.1×10^{-2} (500 $\mu\text{g/mL}$) or as requested by TFs. After addition of the chemicals to the tank, a "post" sample is taken and analyzed to ensure the proper amounts have been added. Corrections are then made to the tank chemistry as necessary.

2.0 SOURCES

2.1 Requirements

ATS-310, *222-S Laboratory Administration*, Section 6.4, "222-S Laboratory Complex Waste Management Program"

ATS-LO-090-101, *222-S Laboratory Sample Receiving and Custodianship*

TFC-BSM-IRM_DC-C-02, *Records Management*

2.2 References

ATS-LO-090-103, *222-S Laboratory Labeling Sampling Carriers*

ATS-LO-100-151, *Laboratory Waste Generation*

ATS-LO-110-129, *Generation of Nonradioactive Waste and Recyclable Materials*

3.0 PRECAUTIONS AND LIMITATIONS

For each shipment to TFs, the waste must be within the parameters of the approved waste profile sheet. Generators may use more than one approved waste profile sheet for separate waste shipments.

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Quantities of NaOH and NaNO₂ to be added to Tank 102 for treatment are determined by a 222-S analytical chemist based on the analytical results from the initial tank sampling. Further treatment may be required if the acceptance standard is not met. Additional treatment quantities are determined by the chemist based on analytical results from the post treatment tank sampling.

Addition of large quantities of NaOH to acid solution may create spot boiling in the tank. The tank agitator must be operating during neutralization to prevent spot heating or boiling.

All waste generated within the sample gallery sample hood is to be managed as "mixed" waste in accordance with procedure ATS-LO-100-151.

The work crew performing this procedure in the 219-S Sample Gallery shall be composed of at least 2 people. In the event of an emergency, the second person can summon help using the telephone, activating the 219-S emergency assistance alarm or contacting the BED by other means.

Personnel can be exposed to radiation, contamination, and corrosive chemicals when sampling. If personnel are exposed, the following apply.

- If a sample is spilled or contamination spread occurs, notify the Health Physics Technician (HPT) and facility operations management (FOM).
- A telephone is located in the operating gallery. An emergency HELP button is located in the sample gallery.
- Safety showers are located outside the 219-S building along the north side and behind the instrument panel in the operating gallery.
- If a sample comes in contact with the skin, flush it off with water for 15 minutes, and notify HPT, FOM, and supervision. Proceed with containment and cleanup as directed by the HPT and FOM.
- Portable eyewash station will be located on the north side of 219-S near the operating gallery/conference room doors.

4.0 SPECIAL TOOLS, EQUIPMENT, AND MATERIALS

Obtain the following tools, material, and equipment.

Acid suit

Absorbent paper

Chemical goggles

Dose rate and count rate instruments

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

Eyewash station (portable)

Face shield

Gloves, chemical-resistant

Grab air sampler, 47 mm media, and envelope

Plastic bag

Radioactive material labels

Rod

Rubber matting

Rubber stopper assembly

Sample and Treat Liquid Waste Checklist

Sample containers as per the Chain of Custody (COC)

Sample pump

Tape

Tubing, rubber

Water

5.0 PREREQUISITES

Ensure Radiological Control is notified two weeks (or as early as reasonably possible) of planned initial sampling to update ALARA Management Worksheet (AMW) survey data.

As practicable, a two-week notification shall be given to the Tank Operations Contractor (TOC) Process Control before initial sampling.

Ensure Generator Knowledge Form (GKF) has been submitted before sampling.

A prejob safety briefing shall be completed and include a review of the AMW and Radiological Work Permit (RWP); tools and supplies needed to perform the work shall be available at the job site.

Obtain shipment number for inclusion on the Sample and Treat Liquid Waste Checklist.

Obtain a Chain of Custody (COC) (Site Form A-6003-962)

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

Before performing tank sampling or tank treatment activities, electricians must be contacted to turn on the tank AGITATOR M2 electrical disconnect switch.

Ensure portable eye wash station has been staged within 50 feet or 10 seconds.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

6.0 INSTRUCTIONS

6.1 Sample Tank 102

NOTE

If sampling for polychlorinated biphenyls (PCBs) only, use rinsed glass sample bottles. Do not use poly bottles or safety coated glass.

- 6.1.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).
 - a. **ENSURE** top portion is completed by operations lead or FOM.
- 6.1.2 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that waste sampling will be performed.
 - a. **DOCUMENT** notification on checklist.
- 6.1.3 **ENSURE** electrician has placed the tank AGITATOR M2 electrical disconnect switch in the ON position.
- 6.1.4 In the Operating Gallery, **START** Tank 102 agitator (AGITATOR M2).
 - a. **PRESS** START button.
 - b. **VERIFY** the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing the action.
 - c. **AGITATE** tank for 45 minutes.
- 6.1.5 **BEFORE** entering the sample gallery, **START** the exhaust fan for the sample hood.
 - The exhaust fan START button is located at the entry to the sample gallery.

WARNING

Radiological exposure hazards exist while sampling.

- 6.1.6 **REQUEST** HPT to set up and start grab air sampling.
- 6.1.7 **REQUEST** HPT determine contamination levels and dose rate at sample box.
- 6.1.8 **VERIFY** the sample riser is capped.
- 6.1.9 **TURN** the air to the sample jet ON.

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6.1.10 **CIRCULATE** sample air for five minutes.

6.1.11 **ENSURE** the pump is set up as follows.

- a. **IF** new tubing is required, **CUT** tubing to length (approximately 1 meter).
- b. **POSITION** tubing in the pump head.
- c. **ATTACH** the tubing to the rubber stopper assembly.

6.1.12 **TURN** the air to the sample jet OFF.

6.1.13 **REMOVE** sample riser cap.

6.1.14 **REQUEST** HPT to perform contamination surveys on tubing and stopper, if previously used.

6.1.15 **PLACE** tubing with rubber stopper in sample port to prevent contamination spread.

6.1.16 **TURN** the air to the sample jet ON.

6.1.17 **PLACE** the outlet of the tubing into a sample bottle.

<p style="text-align: center;">CAUTION</p> <p>Until the sample bottle has some weight of sample in it, the pumping action on the tubing may cause the bottle to tip over if not held.</p>
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6.1.18 **POSITION** poly bottle and tubing in hand.

6.1.19 **TURN** pump ON.

- a. **ADJUST** jet airflow to obtain sample flow.
- b. **MOVE** speed control on the peristaltic pump to maximum until liquid appears in the tubing.
- c. **ADJUST** the pump speed, as required, to fill the bottle.
- d. **REQUEST** HPT to perform intermittent dose rates on bottle while filling.
- e. **IF** liquid cannot be obtained,
 1. **TURN** the air to the sample jet OFF, and
 2. **RESEAL** the rubber stopper.

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- f. **IF** the tubing appears to be collapsed or otherwise faulty, **REPLACE** before proceeding.

1. **REPEAT** steps 6.1.16 through 6.1.19.e.

NOTE

Step 6.1.20 may be performed at the discretion of the FWS or Cognizant Engineer.

6.1.20 **IF** the sample cannot be obtained,

- a. **ENSURE** air to sample jet is OFF.
- b. **REMOVE** rubber stopper/tubing assembly in sample port.

CAUTION

The sample assembly may be damaged if excessive force is used.

- c. **ROD** sample line with 1/15" rod or wire using a gentle up and down motion.
- d. **REMOVE** rod from sample line and **WIPE** rod as it is removed from sample line.
- e. **REQUEST** HPT to perform contamination surveys on rod.
- f. **PLACE** tubing with rubber stopper in sample port to prevent contamination spread.

6.1.21 **IF** the sample cannot be obtained,

- a. **TURN** the air to the sample jet ON.
- b. **REMOVE** cap from bottle of rinse water with approximately 1 L of water.
- c. **PLACE** the outlet of the tubing into rinse water bottle.

CAUTION

As the rinse water bottle is emptied, the pumping action of the tubing may cause the bottle to tip over if not held.

- d. **POSITION** rinse water bottle and tubing in hand.
- e. **REVERSE** the direction of the pump to empty the rinse water bottle into the sampler.

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- f. **TURN** the pump ON.
- g. **MOVE** speed control on the peristaltic pump to maximum until water is removed from rinse water bottle.

CAUTION

Water may back up in tubing if pumped too quickly into sample line.

- h. **ADJUST** the pump speed, as required, to empty the rinse water bottle.
 - i. **TURN** the pump OFF.
 - j. **TURN** the air to the sample jet OFF.
 - k. **REPEAT** steps 6.1.21.a through 6.1.21.j up to two times for a total of 3 L water as directed by FWS or Cognizant Engineer.
 - l. **REPEAT** steps 6.1.16 through 6.1.19.e to obtain a sample.
 - m. **IF**, the sample cannot be obtained, **NOTIFY** operations lead or FOM.
- 6.1.22 **AFTER** a sufficient volume of liquid has been drawn in accordance with the COC requirements, **PERFORM** the following substeps.
- a. **ADJUST** the speed control to minimum.
 - b. **RAISE** the tubing from bottle
 - c. **CAP** the bottle.
 - d. **REPEAT** steps 6.1.19.a through c and 6.1.22.a through c to fill additional sample bottles as required by the COC.
 - e. **REVERSE** the direction of the pump to clear the tubing.
 - f. **TURN** the pump OFF.
 - g. **REMOVE** cap from bottle of water with approximately 1L water.
 - h. **PLACE** the outlet of the tubing into rinse water bottle.

CAUTION

As the rinse water bottle is emptied, the pumping action on the tubing may cause the bottle to tip over if not held.

- i. **POSITION** rinse water bottle and tubing in hand.

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- j. **REVERSE** the direction of the pump to empty the rinse water bottle into the sampler.
- k. **TURN** the pump ON.
- l. **MOVE** speed control on the peristaltic pump to maximum until water is removed from rinse water bottle.

CAUTION

Water may back up in tubing if pumped too quickly into sample line.

- m. **ADJUST** the pump speed, as required, to empty the rinse water bottle.
- n. **TURN** the pump OFF.
- o. **PLACE** sample end of tubing in an empty bottle.
- p. **TURN** the air OFF.
- q. **REMOVE** tubing from pump head.
- r. **REMOVE** tubing from stopper assembly.
- s. **REQUEST** HPT perform survey of tubing.
- t. **PLACE** tubing in bag.
- u. **DISCARD** tubing if survey limits are exceeded
- v. Using proper bag out technique, **PULL** the stopper assembly from the sampler.
 - 1. BAG,
 - 2. TAPE,
 - 3. LABEL, and
 - 4. STORE for future use.

6.1.23 **REPLACE** the cap on the sample riser.

- a. **MANAGE** waste in accordance with ATS-LO-100-151.
- b. **SURVEY** the work area.

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- 6.1.24 **BEFORE** transporting the sample to laboratory or the waste for disposal, **REQUEST** HPT to survey and determine the sample dose rate(s) and label in accordance with ATS-LO-090-103.

NOTE

The following step may be worked out of sequence.

- 6.1.25 **ENSURE** copy of radiological survey report data is provided to the 222-S radiological planner.
- 6.1.26 **PERFORM** a final check of the area to verify air jet is off, capped, and area is cleaned up.
- 6.1.27 **UPON** leaving the sample gallery, **TURN OFF** the sample hood exhaust fan.
- 6.1.28 In the Operating Gallery, **TURN OFF** "AGITATOR M2" by pressing the STOP button.

NOTE

The following step may be worked out of sequence.

- 6.1.29 **REQUEST** electrician to place the tank AGITATOR M2 electrical disconnect switch in the OFF position.
- 6.1.30 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that sampling is complete
- a. **DOCUMENT** notification on checklist
- 6.1.31 **TRANSPORT** the sample with the COC and RSA to the laboratory for analysis.
- 6.1.32 GIVE completed and signed checklist to FOM as a record copy.

6.2 Treat Tank 102 with Sodium Hydroxide (NaOH)

- 6.2.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).

NOTES

- Step 6.3 may be used instead of this section.
- This work may be performed in conjunction with step 6.4.1.

- a. **ENSURE** the top portion is completed by FOM.

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6.2.2 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that waste treatment is being performed.

a. **DOCUMENT** notification on checklist.

NOTE

The tank agitator must be operating during neutralization to prevent spot heating or boiling.

6.2.3 **ENSURE** electrician has placed the tank AGITATOR M2 electrical disconnect switch in the ON position.

6.2.4 **START** Tank 102 agitator (AGITATOR M2).

a. **PRESS** the START button.

b. **VERIFY** that the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing action.

6.2.5 **CONFIGURE** valves for addition of NaOH from Tank 201 to Tank 102 (see Figure 1).

a. **VERIFY** closed raw-water main supply valve (RW-V-2005).

b. **VERIFY** sodium nitrite valves (WT-V-1008 and WT-V-1009) are closed.

c. **OPEN** valve (WT-V-1006) to Tank 102.

6.2.6 **RECORD** "start" time and "before" gallons on the Tank 102 and Tank 201 Transfer Sheets.

6.2.7 **OBSERVE** the "Tank 201 Gallons" level indicator (WT-LIT-201).

a. **OPEN** the NaOH supply valve (WT-V-1005) to add NaOH.

b. **ALLOW** the necessary quantity per the Sample and Treat Liquid Waste in Tank 102 Checklist to drain into the tank,

1. **CLOSE** valve WT-V-1005.

6.2.8 **OPEN** raw water main supply valve (RW-V-2005) one-fourth turn for 30 seconds to flush the NaOH from the feed lines.

6.2.9 **CLOSE** the raw water main supply valve (RW-V-2005).

6.2.10 **CLOSE** valve (WT-V-1006) to Tank 102.

6.2.11 **TURN OFF** AGITATOR M2 by pressing the STOP button.

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6.2.12 **RECORD** “stop” time and “after” gallons on the Tank 102 and Tank 201 Transfer Sheets.

NOTE

The following step may be worked out of sequence.

6.2.13 **REQUEST** electrician to place the tank AGITATOR M2 electrical disconnect switch in the OFF position.

6.2.14 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that the sodium hydroxide waste treatment is complete.

a. **DOCUMENT** notification on checklist.

6.2.15 **GIVE** completed and signed checklist to FOM as a record copy.

6.3 Treat Tank 102 with Sodium Hydroxide (NaOH) from Drum

6.3.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).

NOTE

This work section may be performed instead of step 6.2.

a. **ENSURE** the top portion is completed by FOM.

6.3.2 **NOTIFY** the lab leader or FOM monitoring alarms in room 3B (373-2425) that waste treatment is being performed.

a. **DOCUMENT** notification on the checklist.

6.3.3 **VERIFY** Chemical Addition drum is empty.

6.3.4 **STAGE** the sodium hydroxide (NaOH) and equipment in 219-S Operating Gallery.

6.3.5 **PROVIDE** secondary containment for NaOH container.

6.3.6 **ASSEMBLE** the peristaltic pump and tygon tubing to be used for the transfer.

6.3.7 **DON** the acid suit, chemical goggles, chemical-resistant gloves, and face shield.

6.3.8 **OPEN** the NaOH container and Chemical Addition drum.

6.3.9 **INSERT** the tygon tubing.

6.3.10 **PUMP** the volume of NaOH into Chemical Addition drum.

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- 6.3.11 **RECORD** the volume and concentration of NaOH pumped into Chemical Addition drum on the Sample and Treat Liquid Waste Transfer Checklist.
- 6.3.12 **IF** the entire contents of the NaOH container is transferred, **DISPOSE** of the tubing and NaOH container in accordance with ATS-LO-110-129.
- 6.3.13 **IF** the NaOH container is not empty,
- REMOVE** the tygon from the container, and
 - PLACE** in a bag for disposal in accordance with ATS-LO-110-129.
 - STORE** NaOH container and pump for future use.
- 6.3.14 **REMOVE** protective clothing.
- 6.3.15 **PERFORM** housekeeping of the general area.

NOTE

The tank agitator must be operating during neutralization to prevent spot heating or boiling.

- 6.3.16 **ENSURE** electrician has placed tank AGITATOR M2 electrical disconnect switch in the ON position.
- 6.3.17 **START** Tank 102 agitator (AGITATOR M2).
- PRESS** the START button.
 - VERIFY** the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing action.
- 6.3.18 **RECORD** “start” time and “before” gallons on the Tank 102 Transfer Sheet.
- 6.3.19 **ADD** sodium hydroxide (NaOH) to Tank 102.
- OPEN** the valve (WT-V-1006) to Tank 102.
 - OPEN** the two drum valves (WT-V-1008 and WT-V-1009).
 - ALLOW** the drum to empty.
 - WASH** out the drum with water.
 - ENSURE** the rinse water has drained from the drum.
 - CLOSE** the two drum valves (WT-V-1008 and WT-V-1009).

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f. **OPEN** the raw water main supply valve (RW-V-2005), 1/4 turn for 30 seconds to flush NaOH to Tank 102.

g. **CLOSE** raw water main supply valve (RW-V-2005).

6.3.20 **REPEAT** steps 6.3.3 through 6.3.19 as necessary to obtain appropriate amount of NaOH in accordance with Sample and Treat Liquid Waste Checklist.

a. **RECORD** stop time and gallon amount on the 219-S transfer sheets.

6.3.21 **PRESS** the STOP button to turn OFF AGITATOR M2.

NOTE

The following step may be worked out of sequence.

6.3.22 **REQUEST** electrician to place tank AGITATOR M2 electrical disconnect switch in the OFF position.

6.3.23 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that the sodium nitrite waste treatment is complete.

a. **DOCUMENT** notification on checklist.

6.3.24 **CLEAN** the area.

6.3.25 **RECORD** stop time and gallon amount on the 219-S transfer sheets.

6.3.26 **GIVE** completed and signed checklist to FOM as a record copy.

6.3.27 **IF** no additional tank treatment is required, **GO TO** step 6.5 for post-neutralization valve configuration.

6.4 Treat Tank 102 with Sodium Nitrite (NaNO_2) from Drum

6.4.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).

NOTE

This work may be performed in conjunction with step 6.2.1.

a. **ENSURE** the top portion is completed by FOM.

6.4.2 **NOTIFY** the lab leader or FOM monitoring alarms in room 3B (373-2435) that waste treatment is being performed.

a. **DOCUMENT** notification on the checklist.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

WARNING

Inhalation of NaNO_2 dust may cause lung irritation, nausea, or headaches. Skin contact with NaNO_2 dust or liquid may cause chemical skin irritations.

- 6.4.3 **DON** acid suit, chemical goggles, chemical-resistant gloves, and face shield.
- 6.4.4 **PREPARE** sodium nitrite (NaNO_2) as follows.
- a. Using hose attached to valve RW-V-2006, **ADD** approximately 25 gallons of raw water to Chemical Addition drum (see Figure 1).
 - b. **PLUG** in the drum agitator to start the agitator.
 - c. **ADD** (slowly) the amount of NaNO_2 specified on the Sample and Treat Liquid Wastes in Tank 102 Checklist (but not more than ~ 25 pounds) to the drum.
 - d. **RUN** the drum agitator until the mixture is uniformly mixed (approximately 90 minutes)
 - e. **UNPLUG** the drum agitator to turn OFF the agitator.
 - f. As needed, **DISPOSE** of the NaNO_2 container in accordance with ATS-LO-110-129.
- 6.4.5 **REMOVE** protective clothing.

NOTE

The tank agitator must be operating during neutralization to prevent spot heating or boiling.

- 6.4.6 **ENSURE** electrician has placed tank AGITATOR M2 electrical disconnect switch in the ON position.
- 6.4.7 **START** Tank 102 agitator (AGITATOR M2).
- a. **PRESS** the START button.
 - b. **VERIFY** the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing action.
- 6.4.8 **RECORD** “start” time and “before” gallons on the Tank 102 Transfer Sheet.
- 6.4.9 **ADD** sodium nitrite (NaNO_2) to Tank 102.
- a. **OPEN** the valve (WT-V-1006) to Tank 102.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102
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- b. **OPEN** the two sodium nitrite valves (WT-V-1008 and WT-V-1009).
 - c. **ALLOW** the Chemical Addition drum to empty.
 - d. **WASH** out the Chemical Addition drum with water.
 - 1. **ENSURE** that the rinse water has drained from the Chemical Addition drum.
 - e. **CLOSE** the two sodium nitrite valves (WT-V-1008 and WT-V-1009).
 - f. **OPEN** the raw water main supply valve (RW-V-2005), 1/4 turn for 30 seconds to flush NaNO_2 to Tank 102.
 - g. **CLOSE** raw water main supply valve (RW-V-2005).
- 6.4.10 **REPEAT** steps 6.4.3 to 6.4.9 as necessary to obtain appropriate amount of NaNO_2 in accordance with Sample and Treat Liquid Waste Checklist.
- a. **RECORD** stop time and gallon amount on the 219-S transfer sheets.
- 6.4.11 **PRESS** the STOP button to turn OFF AGITATOR M2.

NOTE

The following step may be worked out of sequence.

- 6.4.12 **REQUEST** electrician to place tank AGITATOR M2 electrical disconnect switch in the OFF position.
- 6.4.13 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that the sodium nitrite waste treatment is complete.
- a. **DOCUMENT** notification on checklist.
- 6.4.14 **CLEAN** the area.
- a. **PERFORM** final check of area.
- 6.4.15 **RECORD** stop time and gallon amount on the 219-S transfer sheets.
- 6.4.16 **GIVE** completed and signed checklist to FOM as a record copy.

6.5 Post-Neutralization Valve Configuration

- 6.5.1 **PERFORM** post-neutralization valve configuration as follows.
- a. **VERIFY** NaOH supply valve (WT-V-1005) is CLOSED.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102
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- b. **VERIFY** raw-water main supply valve (RW-V-2005) is CLOSED.
- c. **VERIFY** sodium nitrite valves (WT-V-1008 and WT-V-1009) are CLOSED.
- d. **VERIFY** valve (WT-V-1006) is CLOSED.
- e. **VERIFY** Tank 102 agitator is turned OFF.
- f. **VERIFY** Chemical Addition drum agitator is unplugged.

7.0 RECORDS

The following records are generated during the performance of this procedure.

- Sample and Treat Liquid Waste Checklist

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS), is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

8.0 BIBLIOGRAPHY

N/A

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

Attachment 1. Sample and Treat Liquid Waste Checklist

Shipment Number	Page ____ of ____	
<i>NOTE: The top portion to be filled in by FOM</i>		
Tank:		
Activity to be performed:		
Approximate gallons of Sodium Hydroxide (NaOH) to be added:		
Pounds of Sodium Nitrite (NaNO ₂) to be added:		
Operations Supervisor/Delegate print/sign	Date:	
CHECKLIST		
Step Number	Action	Initial
6.1.2/6.2.2/6.3.2/6.4.2	Notified personnel monitoring alarms in room 3B – Task Starting	
6.1.28/6.2.11/6.3.21/6.4.11	Turned off agitator	
6.1.30/6.2.14/6.3.23/6.4.13	Notified personnel monitoring alarms in room 3B – Task Completed	
6.5	Configured the valves (post-neutralization)	
6.2.6/6.2.12/6.3.18/6.3.20/6.3.25/ 6.4.8/6.4.10/6.4.15	Recorded information on 219-S transfer sheets	
Operator: Print/sign		
Date/Time:		

The diagram illustrates the process flow for Tank 201, a caustic tank. The tank is equipped with an overflow line. The flow paths are as follows:

- Overflow:** An overflow line from the top of the tank leads to a vertical pipe with a float valve, which then connects to a line with valve **WT-V-1005**. This line continues to a junction with valve **WT-V-1007**.
- Bottom Outlet:** A line from the bottom of the tank passes through valve **WT-V-1001** to a junction with valve **WT-V-1006**.
- Water Supply:** A **WATER SUPPLY** line enters the system at the junction with valve **WT-V-1006**.
- Chemical Addition:** A **CHEMICAL ADDITION DRUM** feeds into a line with valve **WT-V-1008**, which then joins the main flow at valve **WT-V-1009**.
- Exit:** The final flow exits the system through valve **WT-V-1000**, labeled **TO TANK 102**.

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Transfer from 219-S TANK-102 to 241-SY-101

Tank Farm Plant Operating Procedure

SY Tank Farm

Changes "Other Than Inconsequential" Require These Additional Reviews:

Industrial Hygiene

Radiological Controls

Engineering Checker (Second Engineer)

AA/AB Compliance Lead

Date Inactivated: 11/03/2010

If this document has been inactivated for less than six months, verify that any changes made while it has been inactive are included before returning the document to an active status. If changes are required, process using a Procedure Change Authorization (PCA) as defined in TFC-OPS-OPER-C-13.

Item to check for are as follows:

PER Resolutions

Authorization Basis Changes

Document Safety Analysis (DSA) Implementation

Change to Acceptance Criteria as defined

Next Periodic Review Date — 08/05/2012

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Transfer from 219-S TANK-102 to 241-SY-101**1.0 PURPOSE AND SCOPE****1.1 Purpose**

This procedure provides instructions for transferring waste from 219-S-Tank-102 to Tank 241-SY-101 via Siphon Standpipe Station 5350. This procedure also details 222-S Laboratory responsibilities for preparation, transfer and potential flush. The waste is sampled, analyzed, treated, and batch transferred to Tank Farms through an underground transfer line SNL-5350.

1.2 Scope

This procedure involves all transfer associated valving and instrumentation and the following:

219-S to 241-SY-101 Transfer	
Direct Route Pits	Siphon Standpipe Station 5350
Direct Route Transfer lines	SNL-5350
Transfer Lines disconnected by double valve isolation. ¹	NONE
Transfer Pits disconnected by double valve isolation. ¹	NONE
Tanks that receive physically connected drainage. ²	241-SY-103
Physically connected transfer lines	SNL-5351
Physically connected transfer structures	Siphon Standpipe Station 5351, 241-SY-103
¹ Limited to first transfer line and pit downstream of second valve utilized for double valve isolation.	
² Does not include sending or receiving tanks.	

1.2.1 Currently no transfer from 219-S Tank-102 to Tank Farms Tank 241-SY-103 via motor-operated valve 219S-WT-V-5354 is permitted. Transfers to 241-SY-103 are not covered by this procedure.

1.2.2 Portions of this procedure will be performed by qualified 222-S Laboratory personnel and other portions by certified Waste Transfer qualified Tank Farm personnel.

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Transfer from 219-S TANK-102 to 241-SY-101**2.0 INFORMATION****2.1 Terms and Definitions**

FAIL-SAFE alarm Some alarm locations are equipped with a normal power indication light that illuminates when power is provided to the leak detection station. This normal power indication will go out if power is lost. When alarm locations are equipped with normal power indication, that indication is fail safe therefore no testing is required to verify functionality.

NOTE - Because Tank Farms does not install Calibration/Test Stickers on farm equipment, all calibration/function test verifications must be accomplished using the Work Planning System.

2.1.1 Calibration:

- Preventative Maintenance checks have been performed within required periodicity (calibration is current) with a "satisfactory" result. When authorized by Shift Manager/OE and with Engineering concurrence, a preventative maintenance may be past its CHAMPS scheduled "Next Due" date and prior to its CHAMPS "Late Due" date.

2.1.2 Operable, in general:

- Preventative Maintenance checks have been performed within required periodicity (calibrations/functional tests are current) with a "satisfactory" result. When authorized by Shift Manager/OE and with Engineering concurrence, a preventative maintenance may be past its CHAMPS scheduled "Next Due" date and prior to its CHAMPS "Late Due" date
- If applicable, local/and or remote alarms (i.e. bells, strobe lights, alarm windows, power indication lights not LIT, etc.) are not in alarm
- Instrument/component being inspected appears to be functioning normally (i.e. charts are inking, annunciator lights work, any associated meters are active, etc.).

2.1.3 Operable (for leak detector probes per Environmental):

- Functional test completed within 365 days of expected transfer prior to removal of administrative lock for transfer pump
- Instrument appears to be functioning normally (i.e. annunciator lights work, local beacons are not in alarm, any associated meters are active, etc.)
- If available FAIL-SAFE alarm is on (LIT), operational, and not in alarm (not LIT).
- If permanently installed leak detector systems are inoperable, temporary transfer leak detection system are operable (e.g. video cameras may be utilized if permanently installed leak detector systems are inoperable)

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Transfer from 219-S TANK-102 to 241-SY-101

2.2 General Information

- 2.2.1 Human Performance Indicators: PER-2009-1272 identified a potential Human Error Precursor related to a single flushing section written in the procedure when it is possible that multiple flushes may be performed. As a corrective action any sections of the procedure that need to be re-performed shall be verified by the Shift Manager/OE prior to use.

Special Requirements for Transfer Valving

- 2.2.2 For each valve requiring independent verification the following applies:
- Prior to removing administrative lock condition from transfer pump, Shift Manager shall ensure no other work activities (e.g. transfer line flush, waste transfers, operating procedures, work packages, lockout/tagout, preventative maintenance, etc.) have been performed that may impact the valving configuration initially independently verified to support this transfer.
- 2.2.3 Figures in this procedure are for information only. Actual configuration is depicted on controlled drawings.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

- 3.1.1 Circuit breaker, electrical disconnect, or starter operation <600 Volts with covers on is Hazard Risk Category 0 and requires leather gloves, safety glasses, a long sleeved shirt and long pants of Non-Melting or Untreated Natural Fiber.
- 3.1.2 Transfers may result in marked increases of ammonia and organic vapor levels in the area of the farm. In sufficient concentrations these vapors are hazardous to personnel health.
- 3.1.3 An approved IH monitoring plan must be in effect prior to starting transfer.
- 3.1.4 An approved RadCon monitoring plan must be in effect prior to starting transfer.

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Transfer from 219-S TANK-102 to 241-SY-101**3.2 Radiation and Contamination Control**

- 3.2.1 When performed without a work package, this procedure is limited to radiological areas and work activities permitted by a low risk radiological work permit.
- 3.2.2 When work is performed in or when work will result in a high contamination, high radiation, or an airborne radioactivity area, an approved work package must be developed which is reviewed by Radiological Control per ALARA work planning procedure TFC-ESHQ-RP_RWP-C-03.
- 3.2.3 Radiological monitoring requirements including Window-Open and Window-Closed dose rate and associated monitoring frequencies for this transfer are contained in the corresponding Radiological Monitoring plan. Waste transfers according to this procedure can only be performed when coordinated with Radiological Control and the associated monitoring plan.

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Transfer from 219-S TANK-102 to 241-SY-101

3.3 Environmental Compliance

3.3.1 All tanks and ancillary equipment including piping and pits must be designated as RCRA compliant based on review of the current Tank Farm Routing Board. RCRA compliant includes the following as shown on the current Tank Farm Routing Board:

- “Green” primary transfer lines and pits
- “Blue Dashed” drain line - secondary containment system, non-pressurized lines from the RCRA compliant pits.

NOTE - The double-shell tank system routing board identifies out-of-service and non-compliant components.

3.3.2 Environmental On-Call must be notified immediately per the Environmental On-Call List in accordance with procedure TFC-ESHQ-ENV_FS-C-01 if any of the following occur:

- Waste is inadvertently transferred into an out-of-service or non-compliant double-shell tank system component
- Misrouting or loss of waste containment (spills or leaks), including annunciating leak detectors on the active recirculation/transfer route. This also includes waste water discharges to surface contamination areas.

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Transfer from 219-S TANK-102 to 241-SY-101**3.3 Environmental Compliance (Cont.)**

- 3.3.3 In accordance with RPP-16922 Environmental Specification Requirements, routine maintenance and operation activities may result in small incidental discharge of raw water as long as the following limits and conditions are met:
- Activities generating incidental discharges must be listed in RPP-16922, Tables 7-2 and 7-3
 - No discharge from a single activity may exceed 60 gallons released to the soil
 - Appropriate best management practices shall be implemented to prevent unnecessary discharges
 - No ponding of liquid
 - During pre-job planning, measures to limit soil erosion will be incorporated in the work planning
 - During performance of the work, all measures to limit ponding and/or erosion will be implemented
 - There is no allowable discharge volume for discharges resulting from operating error.
- 3.3.4 Active ventilation on the receiving tank must be maintained during waste disturbing activities (i.e. waste recirculations/transfers). During periods of loss of active ventilation (i.e. exhauster shutdown) or record sampler outage, waste disturbing activities (e.g., rotary mode sampling, waste transfers, or other waste disturbing activities) within tanks served by the affected exhauster (either major or minor), must be shut down.
- 3.3.5 Per the notification procedure TFC-ESHQ-ENV_FS-C-01 immediately report the following to Environmental on-call in accordance with the Environmental On-Call List:
- Unplanned exhauster outages
 - Planned and unplanned record sampler outages
 - Shutdown, or planned and unplanned bypass, or outage of control equipment identified in a Notice of Construction or the Air Operation Permit.
- 3.3.6 Pre and post-job radiological surveys are required.

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Transfer from 219-S TANK-102 to 241-SY-101**3.3 Environmental Compliance (Cont.)**

3.3.7 Waste flow into sending/receiving tanks is to be exhausted using a HEPA filtered ventilation system.

3.3.8 Based on RWP requirements for grab air samples specified by RadCon, notify Environmental per the Environmental On-Call List in accordance with procedure TFC-ESHQ-ENV-FS-C-01 if any of the below items are met. Report all workspace air samples to WRPS Environmental Protection and appropriate WRPS Shift Office in accordance with the following criteria:

- Initial field/count room count of air samples with beta gamma activity greater than 0.2 Derived Air Concentration (DAC)
- Initial field/count room count of air samples with total alpha activity greater than 5.0 DAC
- Results of 7-day decay count of air samples with total alpha activity greater than 0.2 DAC (see NOTE 2 below)
- Report within the same or first shift following the count results for air samples suspected to be radon or daughters (see NOTE 2 below).

NOTE 1: Notification is not required for lapel air sampler samples.

NOTE 2: Notification of workplace air samples that are suspected to be radon will be made within 24 hours after determination that the air samples are not radon and the total alpha activity is greater than 0.2 DAC. Final determination should not normally exceed 7 days, except on weekends or holidays. If the 7th day falls on a weekend or holiday, reporting shall be made on the next workday but must be made within 10 days.

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Transfer from 219-S TANK-102 to 241-SY-101**3.4 Limits****TECHNICAL SAFETY REQUIREMENTS****HNF-SD-WM-TSR-006, Tank Farms Technical Safety Requirements**

- LCO 3.4 DST Induced Gas Release Event Flammable Gas Control
- AC 5.7 Waste leak Evaluation Program
- SAC 5.8.1 DST Induced Gas Release Event Evaluation
- SAC 5.8.5 Waste Transfer System Overpressure Protection
- AC 5.9.1 DST and SST Time to Lower Flammability Limit
- AC 5.9.2 Ignition Controls
- AC 5.9.3 Waste Transfer-Associated Structure Cover Installation and Door Closure
- AC 5.9.4 Waste Characteristics Control
- AC 5.9.5 Nuclear Criticality Safety

HNF-IP-1266, Tank Farms Operations Administrative Controls

- Section 7.2 Material Balance Monitoring
- Appendix 5.B Administrative Lock Controls

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Transfer from 219-S TANK-102 to 241-SY-101**3.4 Limits (Cont.)****ENVIRONMENTAL, SAFETY, HEALTH, AND QUALITY DOCUMENTS**

TFC-ESHQ-RP_ADM-P-01 Radiological Monitoring During Waste Transfers and Waste Pump Maintenance Activities

TFC-ESHQ-IS-C-03 Excavating, Trenching, and Shoring

An approved SCHEDULED RADIATION SURVEY TASK DESCRIPTION

An Approved RadCon monitoring plan

An Approved IH&S monitoring plan

OPERATING SPECIFICATION DOCUMENTS

OSD-T-151-00007 Operating Specifications for the Double-Shell Storage Tanks

RPP-16922, ENVIRONMENTAL SPECIFICATION REQUIREMENTS

Section 5.1 General Requirements for Air Emission Controls

Section 5.5 Tank Monitoring System

Section 7.1 State Discharge Permit 4511

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T S R Compliance

Transfer from 219-S TANK-102 to 241-SY-101

4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following supplies may be needed to perform this procedure:

- _____ • Calculator for material balance calculations
- _____ • Communication device between assigned personnel
- _____ • Other tools, equipment and supplies as identified by Shift Manager/OE/FWS.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- _____ • Working copy of this procedure
- _____ • ATS-LO-040-121, 222-S Laboratory Perform 222-S Process Equipment Surveillance
- _____ • ATS-LO-100-162, 222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank-102
- _____ • TO-040-660, Obtain/Record Double-Shell Tank Temperature Data
- _____ • TFC-ESHQ-IS-C-03, Excavating, Trenching, and Shoring
- _____ • SCHEDULED RADIATION SURVEY TASK DESCRIPTION for 219-S TANK-102 to 241-SY-101 Waste Transfer.

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Transfer from 219-S TANK-102 to 241-SY-101**4.3 222-S Laboratory Pre-Transfer Preparations**

4.3.1 222-S Laboratory Facility Operations Management (222-S Laboratory FWS) **CONFIRM** the following before authorizing the transfer:

- ATS-LO-100-162 has been performed
- Temperature of solution to be transferred is < 125°F.

4.3.2 **CONFIRM AND DOCUMENT** on Data Sheet 1 the following:

- Process Engineering has determined transfer meets all applicable compatibility criteria of HNF-SD-WM-OCD-015
- Waste transfer has been approved.
- Tank Farms Base Operations has or has not authorized post transfer flush.

Check (✓) one: Has ☐ Has not ☐

4.3.3 222-S FWS **OBTAIN** keys for motor operated valve 219S-WT-V-5355 and WT-V-1005 from FOM.

4.3.4 **VERIFY** Tank-201 has been filled with approximately 500 gallons of water.

4.3.5 **PRIOR** performing the tank transfer activities **CONTACT** 222-S Laboratory electricians to turn on tank agitator (AGITATOR M2) electrical disconnect switch.

4.3.6 222-S FWS **VERIFY** completion of Steps 4.3.1 thru 4.3.5 **AND**
DOCUMENT on Data Sheet 1.

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Transfer from 219-S TANK-102 to 241-SY-101**5.0 PROCEDURE**

NOTE - Sections 5.1 and 5.2 may be performed concurrently or in any logical order but steps within each section must be performed in order unless otherwise noted.

5.1 Place 222-S Laboratory in Transfer Configuration

_____ 5.1.1 **DIRECT** all personnel who will be initialing and/or signing this procedure to fill out Signature Sheet 1.

_____ 5.1.2 Tank Farms Base Operations personnel **GO TO** Section 5.2.

NOTE - The 219-S stack ventilation system includes the stack record sampler.

5.1.3 **CONFIRM** 219-S stack ventilation system is in operation.

5.1.4 **CONTACT** 222-S FOM to determine if 296-S-16 Record Sampler is operating prior to flush/transfer.

222-S Laboratory	Operator Initial
296-S-16 Record Sampler	

5.1.5 **CONTACT** the 222-S FOM to determine if the 219-S tank ventilation system is operating prior to flush/transfer.

222-S Laboratory	Operator Initial
219-S Tank Ventilation System	

_____ 5.1.6 **CONFIRM** 222-S Laboratory electrician has placed tank agitator (AGITATOR M2) electrical disconnect in ON position.

_____ 5.1.7 **START** tank agitator (AGITATOR M2) as follows:

_____ 5.1.7.1 **PRESS** start button **AND**

CONFIRM the following:

- Tank agitator (AGITATOR M2) amp dial (WT-II-A-102) is cycling
- Tank-102 level indicator is showing action.

_____ 5.1.8 **AGITATE** tank for at least 45 minutes.

_____ 5.1.9 **AFTER** at least 45 minutes **STOP** tank agitator (AGITATOR M2) by pushing tank agitator (AGITATOR M2) STOP button.

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Transfer from 219-S TANK-102 to 241-SY-101

5.1 Place 222-S Laboratory in Transfer Configuration (Cont.)

5.1.10 **IF** transfer has not been initiated within 4 hours **REPEAT** Steps 5.1.6 through 5.1.9.

NOTE - Step 5.1.11 may be performed any time after Step 5.1.9 has been completed.

_____ 5.1.11 **REQUEST** 222-S Laboratory electrician **PLACE** tank agitator (AGITATOR M2) electrical disconnect switch in OFF position.

_____ 5.1.12 **OBTAIN** key for motor operated valve 219S-WT-V-5355 from 222-S FWS.

NOTE - Attachment 1 is for information only and is not maintained as a record.

_____ 5.1.13 **COMPLETE** Transfer to Tank Farms section "before" column of the 219-S Transfer Sheet for Tank-102 (See Attachment 1 for example of transfer sheet.).

_____ 5.1.14 **OBTAIN AND RECORD** Tank-102 START volume (in gallons) on Data Sheet 1 and Data Sheet 2.

_____ 5.1.15 **CONFIRM** with 222-S Laboratory Stationary Operating Engineer (222-S Laboratory SOE) building air compressors are available **AND**

DOCUMENT on Data Sheet 1. (Refer to procedure ATS-LO-040-121)

_____ 5.1.16 **NOTIFY** 222-S Laboratory leader or 222-S FWS monitoring alarms in room 3B (373-2435) the following will be performed:

- Testing of alarms
- Waste transfer activities.

NOTE - Refer to alarm response procedure ARP-002-100 if leak detection is indicated while performing the procedure.

_____ 5.1.17 **PRESS** each of the three "Test 1" buttons for "Sump 9 Leak/Level" to confirm operability of sump leak detection.

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Transfer from 219-S TANK-102 to 241-SY-101**5.1 Place 222-S Laboratory in Transfer Configuration (Cont.)**

- _____ 5.1.18 **ESTABLISH** direct communications with Tank Farms Base Operations personnel taking part in this transfer (373-2826).
- _____ 5.1.19 **NOTIFY** Tank Farms Base Operations personnel of the following:
- 222-S Laboratory has completed 222-S Laboratory transfer configuration
 - 222-S Laboratory is ready for removal of administrative lock from valve CA-V-6607
 - 222-S Laboratory is ready to transfer when requested.
- _____ 5.1.20 222-S Laboratory personnel **GO TO** Section 5.5.

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Transfer from 219-S TANK-102 to 241-SY-101

5.2 Tank Farms Base Operations Place 241 SY Facility in Transfer Configuration

NOTE - Sections 5.1 and 5.2 may be performed concurrently or in any order but steps within each section must be performed in order unless otherwise noted.

- Steps 5.2.1 through 5.2.17 may be performed in any logical order as directed by Shift Manager/OE.

- _____ 5.2.1 **RECORD** any miscellaneous notes, comments, or other transfer related remarks on Data Sheet 8.
- _____ 5.2.2 **IF** low light conditions may occur during this transfer **PERFORM** transfer route walkdown **AND**
- CONFIRM** adequate lighting is staged and operable to supply night time waste transfer operations.
- _____ 5.2.3 **IF** performing transfer and Shift Manager/OE directs, **RAISE** 241-SY-101 manual tape approximately 2 inches above estimated final liquid level unless using manual tape for liquid level monitoring. (See Engineering Transfer Controls Checklist 1)
- 5.2.4 **NOTIFY** IH&S of approximate date/time of transfer (or flush as applicable) will start, **AND**
- CONFIRM** baseline information for the following approved transfer IH monitoring plans is complete.
- IH monitoring plan # _____

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Transfer from 219-S TANK-102 to 241-SY-101

5.2 Tank Farms Base Operations Place 241 SY Facility in Transfer Configuration (Cont.)

5.2.5 **NOTIFY** RadCon of approximate date/time transfer (or flush as applicable) will start, **AND**

CONFIRM baseline information for the following approved RadCon monitoring plan is complete.

RadCon monitoring plan # _____

_____ 5.2.6 **PERFORM** required equipment checks per Checklist 3. (SAC 5.8.5, AC 5.9.3, RPP-16922)

_____ 5.2.7 **PRIOR** to transfer **PROVIDE** Shift Manager with completed copy of Checklist 3.

_____ 5.2.8 Shift Manager **REVIEW** "Temporary Modification and Bypass Log" at Shift Office or on the web at
\\AP014\TempMods\Temporary Modifications\Temp Mod Logbook.xls, **AND**

CONFIRM no physically connected transfer route leak detectors are bypassed.

_____ 5.2.9 Shift Manager **REVIEW** Standing Orders, Red Arrow entries, and open Action Tracking Binder (ATB) items for impact to planned transfer.

_____ 5.2.10 Shift Manager **CONFIRM** Tank Farm Engineering has completed and signed Checklist 1.
 (AC 5.7, SAC 5.8.1, SAC 5.8.5, AC 5.9.1, AC 5.9.2, AC 5.9.4, 5.9.5 OSD-T-151-00007)

_____ 5.2.11 Shift Manager **REVIEW** Checklist 1, **AND**

IF Engineering has determined 241-SY-101 requires additional ventilation control per the waste compatibility evaluation, **CONFIRM** Shift Manager has initiated a temporary rounds sheet or other appropriate method to ensure required ventilation controls and flammable gas monitoring are performed before, during, and for 7 days following, the completion of the waste transfer. (LCO 3.4, SAC 5.8.1)

_____ 5.2.12 **PERFORM** visual inspection of transfer route to determine if excavation activities are in-progress within 5 feet of transfer route, **AND**

DOCUMENT in "Initial" column on Excavation walkdown Data Sheet 7. (See Table 3 - Excavation Inspection Drawing List). (TFC-ESHQ-IS-C-03)

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Transfer from 219-S TANK-102 to 241-SY-101

5.2 Tank Farms Base Operations Place 241 SY Facility in Transfer Configuration (Cont.)

- _____ 5.2.13 **CHECK** Shift Manager has confirmed excavation covers or facility worker protection measures are in place for physically connected unburied transfer lines. (TFC-ESHQ-IS-C-03)
- _____ 5.2.14 **OBTAIN AND RECORD** physically connected tank liquid level data in "Start" column on Data Sheet 6.
- _____ 5.2.15 **OBTAIN AND RECORD** initial temperature readings in "Start" column on Data Sheet 5. (OSD-T-151-00007)
- _____ 5.2.15.1 **IF** any thermocouple readings cannot be obtained **REQUEST** Tank Farm System engineer evaluate condition **AND**
- PROCEED** as Shift Manager/OE considers appropriate based upon Tank Farm engineering recommendations.
- 5.2.16 **CONTACT** Shift Manager to determine if primary ventilation system's Record Samplers are operating prior to flush/transfer. (RPP-16922, Section 5.1)

Tank Farm	Operator Initial or N/A
241-SY A Train Primary Record Sampler	
OR	
241-SY B Train Primary Record Sampler	

- 5.2.17 **CONFIRM** the following primary ventilation systems are operating prior to flush/transfer. (RPP-16922, Section 5.1)

Tank Farm	Operator Initial or N/A
241-SY A Train (296-S-25)	
OR	
241-SY B Train (296-P-23)	

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Transfer from 219-S TANK-102 to 241-SY-101**5.3 Prepare to Remove Administrative Lock Condition from Valve CA-V-6607**

Line Hold-up Volume	0.44 inches 1200 gallons
Estimated time of arrival	20 minutes (at approx. 60 gpm)

NOTE - Step 5.3.1 is not required if transfer pump is being restarted within 72 hours of shutdown.

5.3.1 **REVIEW** Steps 5.2.1 through 5.2.17, **AND**
VERIFY all steps have been satisfactorily completed.

Shift Manager /OE: _____ / _____
Signature Date

NOTE - Step 5.3.2 is not required if transfer pump is being restarted within 72 hours of shutdown.

_____ 5.3.2 **IF** required, **OBTAIN AND RECORD** initial Material Balance readings **AND**
PERFORM calculations in "START" column on Data Sheet 3.

_____ 5.3.3 **MONITOR** this transfer at applicable local field locations for leak detection and tank pressures.

_____ 5.3.4 **CONFIRM** the following:

- All personnel monitoring this transfer are in direct communications with each other
- All alarms associated with Checklist 3 checks for this transfer are CLEAR at monitoring station(s) designated by Shift Manager/OE
 - Power is available at applicable Leak Detection Stations by performing beacon/light check at applicable Leak Detection Stations.
- Operators are stationed at Field Alarm locations required per Checklist 3.

_____ 5.3.5 **CONFIRM** direct communications with 219-S operations personnel taking part in this transfer has been established (373-3192).

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Transfer from 219-S TANK-102 to 241-SY-101**5.4 Remove Administrative Lock Condition from Valve CA-V-6607**

- _____ 5.4.1 **PRIOR** to removal of admin lock condition, Shift Manager, **CONFIRM** all alarms associated with Checklist 3 checks for this transfer are **CLEAR** at monitoring stations designated by Shift Manager/OE.
- _____ 5.4.2 **PRIOR** to transfer issue a Shift Office Event Notification (SOEN) message alerting personnel of possible odors during transfer.

CRITICAL TASK

The purpose of the administrative lock is to prevent unplanned waste transfers caused by inadvertent pump starts. Removal of the administrative lock will make it possible to inadvertently start the transfer pump. Increased awareness and caution should be exercised once the lock is removed. (S-102 CAP)

- _____ 5.4.3 **WHEN** requested by 222-S Laboratory and all other prerequisites have been completed **OBTAIN** Shift Manager authorization, **AND**
- REMOVE** administrative lock condition from valve CA-V-6607 for 219-S transfer pump. (HNF-IP-1266 Appendix 5.B)
- _____ 5.4.4 **NOTIFY** 222-S Laboratory personnel administrative lock has been removed from valve CA-V-6607.
- _____ 5.4.5 **GO TO** Section 5.6.

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Transfer from 219-S TANK-102 to 241-SY-101**5.5 222-S Laboratory Personnel Perform Transfer**

NOTE - Sections 5.5 and 5.6 may be performed concurrently or in any logical order but steps within each section must be performed in the order listed unless otherwise noted.

CRITICAL TASK

Base Operation's removal of administrative lock from valve CA-V-6607 without performing prerequisite activities will result in a violation of HNF-1266 Appendix 5.B requirements. Compliance with safety basis requirements is mandatory.

- _____ 5.5.1 **BEFORE** proceeding, **WAIT** until Tank Farms Base Operations provides notification administrative lock has been removed from valve CA V-6607.
- _____ 5.5.2 **AFTER** Tank Farms Base Operations removes administrative lock from valve CA-V-6607 **OPEN** valve CA-V-6607.
- _____ 5.5.3 **OPEN** motor operated valve 219S-WT-V-5355 to SY-101.
- _____ 5.5.4 **CONFIRM** motor operated valve 219-S-WT-V-5355 red open light is LIT.
- _____ 5.5.5 **CONFIRM** motor operated valve 219-S-WT-V-5354 indicates CLOSED.

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Transfer from 219-S TANK-102 to 241-SY-101

5.5 222-S Laboratory Personnel Perform Transfer (Cont.)

_____ 5.5.6 **REQUEST** Tank Farms Base Operations ensure HS-302D located on panel "A" in 242-S control room is in "RESET" position, **THEN PUSH** hand switch HS-302C button for "219-S Transfer Pump Permit."

_____ 5.5.7 **CONFIRM AND DOCUMENT** on Data Sheet 1 the "PERMITTED" light is ON.

_____ 5.5.8 **REQUEST** Tank Farms Base Operations confirm panel "A" AMBER indicating light "219-S Transfer Pump (P-1)" energizes to indicate the transfer is PERMITTED.

5.5.9 **IF** in an alarm or an emergency condition, as shown on Table 2 **IMMEDIATELY SHUTDOWN** transfer per Section 5.7 **AND**

NOTIFY FOM and Shift Manager/OE.

5.5.9.1 **DOCUMENT** alarm or emergency condition and actions taken on Data Sheet 8.

_____ 5.5.10 **PLACE** transfer pump P1 speed control HY301 to "MIN" position.

NOTE - Steps 5.5.11 and 5.5.12 are performed simultaneously.

_____ 5.5.11 **CLOSE** siphon hand valve HV-305 **AND**

PERFORM the following:

_____ 5.5.11.1 **MOVE** switch "Siphon Valve HV-305" to the CLOSE position **AND**

HOLD until "Transfer TK-102 to SY Tank Farms" has been OPENED (Step 5.5.12).

_____ 5.5.11.2 **CONFIRM** "Siphon Valve HV-305" CLOSED green light is LIT.

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Transfer from 219-S TANK-102 to 241-SY-101

5.5 222-S Laboratory Personnel Perform Transfer (Cont.)

5.5.12 **OPEN** "Transfer TK-102 to SY Tank Farms" as follows:

5.5.12.1 **MOVE** switch "Transfer TK-102 to SY Tank Farms" to the OPEN position **AND**

HOLD until only the OPEN light is LIT.

5.5.12.2 **RELEASE** both switches ("Siphon Valve HV-305" and "Transfer TK-102 to SY Tank Farms").

NOTE - "Siphon Valve HV-305" and "Transfer TK-102 to SY Tank Farms" switches will return to AUTO position when released.

5.5.13 **OPEN** transfer pump air bleed valve CA-V-6616.

5.5.14 **SLOWLY MOVE** "Transfer Pump P1 Speed Control HY-301" to the "MAX" position **AND**

DOCUMENT pump start time on Data Sheet 1 and Data Sheet 2.

5.5.15 **NOTIFY** Tank Farms Operations of transfer start time for entry on Data Sheet 3 or Data Sheet 4 for restart.

5.5.16 **AFTER** approximately 30 seconds but **BEFORE** 1 minute **CLOSE** valve CA-V-6616.

5.5.17 **CHECK** flow has started by noting a decrease in Tank-102 level.

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Transfer from 219-S TANK-102 to 241-SY-101

5.5 222-S Laboratory Personnel Perform Transfer (Cont.)

NOTE - Tank-104 level is expected to increase slightly when pump bleed valve CA-V-6616 is open but should not continue to increase after pump bleed valve CA-V-6616 is closed.

_____ 5.5.18 **MONITOR** Tank-104 level to ensure tank level is not increasing.

_____ 5.5.19 **NOTIFY** the following personnel transfer has started:

- 222-S FOM
- Tank Farms Base Operations

NOTE - Per Table 1 the transfer must be shutdown if 219S does not show a level decrease within 5 minutes of start of transfer.

_____ 5.5.20 **NOTIFY** Tank Farms Base Operations of the following:

- Time transfer was started
- Time 219-S shows a level decrease.

_____ 5.5.21 **REQUEST** 222-S Laboratory engineer or designee monitor flow rate of transfer.

_____ 5.5.22 **AS** determined by 222-S Laboratory engineer or 222-S Laboratory FWS **IF** transfer flow rate drops more than 10 gallons per minute below initial transfer flow rate at any time during the transfer **PERFORM** the following:

_____ 5.5.22.1 **OPEN** pump bleed valve CA-V-6616 for approximately two minutes;
THEN

CLOSE pump bleed valve CA-V-6616.

_____ 5.5.23 **WHEN** tank is empty or at level as directed by 222-S FWS **SHUTDOWN** transfer per Section 5.7.

NOTE - 219-S transfer pump requires approximately 2000 gallons in Tank 102 to self prime and establish flow.

_____ 5.5.24 **IF** restarting 219-S transfer pump (P-1), **GO TO** Step 5.5.6.

_____ 5.5.24.1 **IF** flow cannot be established due to low volume in 219-S Tank 102,
GO TO Section 5.7.

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Transfer from 219-S TANK-102 to 241-SY-101

5.6 Tank Farms Base Operations Personnel Conduct In-Progress Transfer Operations

NOTE - Section 5.6 may be performed concurrently or in any logical order with Sections 5.5 or 5.7 but steps within each section must be performed in the order listed unless otherwise noted.

- _____ 5.6.1 **WHEN** notified by 222-S Laboratory personnel transfer has started **USE** radio or other available communication system to make a general announcement stating "Transfer from 219-S Tank-102 to 241-SY-101 has started".
- _____ 5.6.1.1 **CONFIRM** the following personnel received Transfer-Start announcement:
- Shift Manager
 - IH&S
 - RadCon
 - All other appropriate personnel as determined by OE.
- _____ 5.6.2 **IF** restarting after shutdown, **RECORD** actual time and date transfer pump was restarted on Data Sheet 4.
- _____ 5.6.3 IH&S **PERFORM** monitoring in accordance with the IH monitoring plan.
- _____ 5.6.4 RadCon **PERFORM** monitoring in accordance with the RadCon monitoring plan.
(TFC-ESHQ-RP_ADM-P-01, TFC-ESHQ-IS-C-03)

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Transfer from 219-S TANK-102 to 241-SY-101

5.6 Tank Farms Base Operations Personnel Conduct In-Progress Transfer Operations (Cont.)

NOTE - Pressing the switch HS-302D located on panel A in 242-S control room will stop the transfer pump at any time.

5.6.5 **IF** transfer shutdown criteria is met as listed on Table 1 or in an emergency **PRESS** switch HS-302D **AND**

CONFIRM 219-S transfer pump stops by contacting 219-S operations.

NOTE - 30 and 60 minutes readings are not required if re-starting as long as readings less than or equal to every 3 hours have continued during pump shutdown period.

5.6.6 **OBTAIN AND RECORD** intermediate transfer data on Data Sheet 4, at the following intervals:

- 30 minutes after start of transfer pump
- 60 minutes after start of transfer pump
- Less than or equal to every 3 hours thereafter during transfer.

5.6.6.1 **IF** any readings are out-of-specifications **IMMEDIATELY SHUTDOWN** transfer per Section 5.7 as required by Table 1 **AND** **NOTIFY** Shift Manager/OE.

5.6.6.2 **IF** any readings are out-of-specifications **DOCUMENT** out-of-specification condition(s) and actions taken on Data Sheet 8.

NOTE - Tank Farm System Engineering may authorize MBD reset prior to exceeding MBD limit based upon data evaluations.

5.6.7 **PRIOR** to exceeding limit, **IF** Tank Farm System Engineering authorizes reset of MBD, **PERFORM** the following:

5.6.7.1 **COMPLETE** Checklist 2, **AND**

IF applicable, **REQUEST** Tank Farm Systems Engineering approval to restart transfer pump.

5.6.7.2 **IF** Tank Farm Systems Engineering approves Checklist 2, **START** new Data Sheet 3 and Data Sheet 4, **AND**

IF applicable, **RESTART** transfer pump.

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Transfer from 219-S TANK-102 to 241-SY-101

5.6 Tank Farms Base Operations Personnel Conduct In-Progress Transfer Operations (Cont.)

NOTE - 30 and 60 minutes readings are not required if re-starting as long as readings less than or equal to every 3 hours have continued during pump shutdown period.

- _____ 5.6.8 **OBTAIN AND RECORD** physically connected tank liquid level data on Data Sheet 6 at the following intervals:
- 30 minutes after start of transfer
 - 60 minutes after start of transfer
 - Less than or equal to every 3 hours thereafter until administrative locks are reinstalled.
- _____ 5.6.9 **PERFORM** visual inspection of transfer route (existing excavations previously inspected) and excavation activities within 5 feet of transfer route once daily after start of transfer, **AND**
- DOCUMENT** on excavation walkdown Data Sheet 7. (TFC-ESHQ-IS-C-03)
- _____ 5.6.10 **OBTAIN AND RECORD** temperature monitoring data on Data Sheet 5 once per shift during transfer. (OSD-T-151-00007)
- _____ 5.6.10.1 **IF** any thermocouple readings cannot be obtained **REQUEST** Tank Farm System engineer evaluate condition **AND**
- PROCEED** as Shift Manager/OE considers appropriate based upon Tank Farm engineering recommendations.
- _____ 5.6.10.2 **IF** it is determined to shutdown transfer **GO TO** Section 5.7.
- _____ 5.6.10.3 **IF** it is determined not to shutdown transfer **DOCUMENT** engineering recommendation(s) and actions taken on Data Sheet 8 **AND**
- CONTINUE** with transfer.
- _____ 5.6.11 **WHEN** transfer/flushing has been completed or as directed by Shift Manager/OE, **GO TO** Section 5.8.

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Transfer from 219-S TANK-102 to 241-SY-101

5.7 222-S Laboratory Shutdown Transfer

NOTE - Sections 5.6 and 5.7 may be performed concurrently or in any logical order but steps within each section must be performed in the order listed unless otherwise noted.

5.7.1 **WHEN** any of the following occur 219-S **SHUTDOWN** transfer per this section:

- _____ • Any conditions listed on Table 2 occur
- _____ • Tank-102 is empty
- _____ • Directed by 222-S FWS
- _____ • Requested by Tank Farms Base Operations personnel.

NOTE - Steps 5.7.2 and 5.7.3 are performed simultaneously.

- Valve HV-305 will automatically move to the OPEN position when "Transfer TK-102 to SY Tank Farms" is placed in the CLOSE position.

_____ 5.7.2 **MOVE** switch "Transfer TK-102 to SY Tank Farms" to the CLOSED position
AND

HOLD until only the "CLOSED" light is LIT **AND**

THEN RELEASE.

_____ 5.7.3 **MOVE** switch "Siphon Valve HV-305" to the OPEN position.

_____ 5.7.4 **CONFIRM** "Siphon Valve HV-305" OPEN red light is LIT.

_____ 5.7.5 **MOVE** "Transfer Pump P1 Speed Control HY-301" to "MIN."

_____ 5.7.6 **FOR** approximately two minutes **OPEN** pump bleed valve CA-V-6616.

_____ 5.7.7 **CLOSE** transfer pump bleed valve CA-V-6616.

_____ 5.7.8 **CLOSE** valve CA-V-6607.

_____ 5.7.9 **RECORD** stop time on Data Sheet 1 and Data Sheet 2 **AND**

NOTIFY Tank Farms Operations to **RECORD** stop time on Data Sheet 4.

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Transfer from 219-S TANK-102 to 241-SY-101

5.7 222-S Laboratory Shutdown Transfer (Cont.)

- _____ 5.7.10 **RECORD AND DOCUMENT** on Data Sheet 1 and Data Sheet 2 final tank volume.
- _____ 5.7.11 **CALCULATE AND RECORD** gallons transferred on Data Sheet 1 and Data Sheet 2.
- _____ 5.7.12 **NOTIFY** Tank Farms Operations of the following:
 - Transfer is complete
 - Flushing preparations are about to start
 - Ending volume in 219-S tank 102.
- _____ 5.7.13 **IF** flushing is not authorized, **GO TO** Step 5.7.56. (Refer to Step 4.3.2)
- _____ 5.7.14 **CONFIRM** valves WT-V-1008, and WT-V-1009 are CLOSED.
- _____ 5.7.15 **OBTAIN** key for WT-V-1005 from 222-S FWS.
- _____ 5.7.16 **OPEN** valve WT-V-1005.
- _____ 5.7.17 **OPEN** valve WT-V-1006.
- _____ 5.7.18 **ALLOW** Tank-201 to drain to approximately 0 gallons and until audible indication stops that water is passing through WT-V-1005.
- _____ 5.7.19 **CLOSE** valve WT-V-1005.
- _____ 5.7.20 **REINSTALL** lock on WT-V-1005 **AND**
RETURN key to 222-S FWS.
- _____ 5.7.21 **OPEN** valve RW-V-2005.
- _____ 5.7.22 **FILL** Tank-102 to approximately 2000 gallons as indicated on Level Indicator.
- _____ 5.7.23 **CLOSE** valve RW-V-2005.
- _____ 5.7.24 **CLOSE** valve WT-V-1006.
- _____ 5.7.25 **REQUEST** 222-S Laboratory electrician to place tank agitator (AGITATOR M2) electrical disconnect in the ON position.

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Transfer from 219-S TANK-102 to 241-SY-101

5.7 222-S Laboratory Shutdown Transfer (Cont.)

- _____ 5.7.26 **START** tank agitator (AGITATOR M2) as follows:
- _____ 5.7.26.1 **PRESS** start button.
- _____ 5.7.26.2 **CONFIRM** the following:
- Tank agitator (AGITATOR M2) amp dial (WT-II-A-102) is cycling
 - Tank-102 level indicator is showing action.
- _____ 5.7.26.3 **AGITATE** tank for at least 45 minutes.
- _____ 5.7.27 **AFTER** at least 45 minutes **STOP** tank agitator (AGITATOR M2) by pushing STOP button.
- 5.7.28 **IF** transfer has not been started with 4 hours **REPEAT** Steps 5.7.25 through 5.7.26.3.
- NOTE - Step 5.7.29 may be performed any time after Step 5.7.27 has been completed.
- _____ 5.7.29 **REQUEST** 222-S Laboratory electrician to place tank agitator (AGITATOR M2) electrical disconnect switch in OFF position.
- _____ 5.7.30 **RECORD AND DOCUMENT** on Data Sheet 1 and Data Sheet 2 starting tank volume.
- _____ 5.7.31 **NOTIFY** Tank Farms Base Operations that 219-S is ready to transfer flushing raw water to 241-SY-101 **AND**
- WAIT** for approval from Tank Farms Base Operations to start flush.
- _____ 5.7.32 **WHEN** Tank Farm Base Operation's approval to start flush has been received **OPEN** valve CA-V-6607.
- _____ 5.7.33 **CONFIRM AND DOCUMENT** on Data Sheet 1 the "PERMITTED" light is still LIT,
- OR**
- REQUEST** Tank Farms Base Operations to push HS-302C.
- _____ 5.7.34 **CONFIRM** "Transfer Pump P1 Speed Control HY301" is in the "MIN" position.

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Transfer from 219-S TANK-102 to 241-SY-101

5.7 222-S Laboratory Shutdown Transfer (Cont.)

NOTE - Steps 5.7.35 CLOSE "Siphon Valve HV-305" and 5.7.36 OPEN "Transfer TK-102 to SY Tank Farms" are performed simultaneously.

_____ 5.7.35 **CLOSE** "Siphon Valve HV-305" as follows:

_____ 5.7.35.1 **MOVE** switch "Siphon Valve HV-305" to the CLOSED position
AND

HOLD until "Transfer TK-102 to SY Tank Farms" has been
OPENED (Step 5.7.32).

_____ 5.7.35.2 **CONFIRM** "Siphon Valve HV-305" CLOSED green light is lit.

_____ 5.7.36 **OPEN** "Transfer TK-102 to SY Tank Farms" as follows:

_____ 5.7.36.1 **MOVE** switch "Transfer TK-102 to SY Tank Farms" to the OPEN
position **AND**

HOLD until only the OPEN light is LIT.

_____ 5.7.36.2 **RELEASE** switches ("Siphon Valve HV-305" and "Transfer TK-102
to SY Tank Farms").

NOTE - "Siphon Valve HV-305" and "Transfer TK-102 to SY Tank Farms"
switches will return to AUTO position when released.

_____ 5.7.37 **OPEN** pump air bleed valve CA-V-6616.

_____ 5.7.38 **SLOWLY MOVE** "Transfer Pump P1 Speed Control HY-301" to the "MAX"
position **AND**

DOCUMENT pump start time on Data Sheet 1 and Data Sheet 2.

_____ 5.7.39 **CLOSE** valve CA-V-6616, after approximately 30 seconds but before 1 minute.

_____ 5.7.40 **CONFIRM** flow has started by noting a decrease in Tank-102 level.

NOTE - Tank-104 level is expected to increase slightly when pump bleed valve CA-V-6616
is open but should not continue to increase after valve is closed.

_____ 5.7.41 **MONITOR** Tank-104 level to ensure tank level is not increasing.

_____ 5.7.42 **NOTIFY** 222-S FOM transfer has started.

_____ 5.7.43 **NOTIFY** Tank Farms Base Operations transfer/flush has started (373-2826).

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Transfer from 219-S TANK-102 to 241-SY-101

5.7 222-S Laboratory Shutdown Transfer (Cont.)

- _____ 5.7.44 **REQUEST** 222-S Laboratory engineer or designee monitor flow rate of transfer.
- _____ 5.7.45 **AS** determined by 222-S Laboratory Engineering or 222-S Laboratory FWS **IF** transfer flow rate drops more than 10 gallons per minute below initial transfer flow rate at any time during the transfer **PERFORM** the following:
- 5.7.45.1 **OPEN** pump bleed valve CA-V-6616 for approximately two minutes.
- 5.7.45.2 **AFTER** approximately two minutes **CLOSE** pump bleed valve CA-V-6616.
- NOTE - Steps 5.7.46 "Move switch "Transfer TK-102 to SY Tank Farms" to CLOSE position" and 5.7.47 "Move switch 'Siphon Valve HV-305' to the OPEN position" are performed simultaneously.
- Valve HV-305 will automatically move to the OPEN position when "Transfer TK-102 to SY Tank Farms" is placed in the CLOSE position.
- _____ 5.7.46 **WHEN** tank is empty or at level as directed by 222-S FWS, **MOVE** switch "Transfer TK-102 to SY Tank Farms" to the CLOSE position **AND**
- HOLD** until only "CLOSED" light is lit **THEN RELEASE** switch.
- _____ 5.7.47 **MOVE** switch "Siphon Valve HV-305" to the OPEN position.
- _____ 5.7.48 **CONFIRM** "Siphon Valve HV-305" OPEN red light is LIT.
- _____ 5.7.49 **MOVE** "Transfer Pump P1 Speed Control HY-301" to "MIN" position.
- _____ 5.7.50 **OPEN** pump bleed valve CA-V-6616 for approximately two minutes.
- _____ 5.7.51 **AFTER** approximately two minutes **CLOSE** pump bleed valve CA-V-6616.
- _____ 5.7.52 **CLOSE** valve CA-V-6607.
- _____ 5.7.53 **RECORD** pump stop time on Data Sheet 1 and Data Sheet 2.
- _____ 5.7.54 **RECORD** final tank volume on Data Sheet 1 and Data Sheet 2.
- _____ 5.7.55 **CALCULATE AND RECORD** gallons transferred on Data Sheet 1 and Data Sheet 2.

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Transfer from 219-S TANK-102 to 241-SY-101

5.7 222-S Laboratory Shutdown Transfer (Cont.)

_____ 5.7.56 **NOTIFY** Tank Farms Base Operations of gallons transferred **AND**
DOCUMENT on Data Sheet 1.

NOTE - When Hand switch HS-302D is in the DENY position PERMITTED light is OFF.

_____ 5.7.57 **REQUEST** Tank Farms Base Operations position hand switch HS-302D to DENY position **AND**
DOCUMENT on Data Sheet 1.

_____ 5.7.58 **CONFIRM** PERMITTED light is OFF **AND**
DOCUMENT on Data Sheet 1.

_____ 5.7.59 **NOTIFY** Tank Farms Base Operations valve CA-V-6607 is closed and administrative lock may be reinstalled **AND**
DOCUMENT on Data Sheet 1.

_____ 5.7.60 **NOTIFY** 222-S FOM transfer is complete.

_____ 5.7.61 **WHEN** notified by Tank Farms Base Operations material balance is completed but no longer than 4 hours after transfer, **CLOSE AND**
DOCUMENT on Data Sheet 1 "Motor Operated Valve 219-S-WT-V-5355 to SY 101" position.

NOTE - Up to one minute may pass before panel light(s) turn OFF/ON after closing or opening valve(s).

_____ 5.7.62 **CONFIRM** "Motor Operated Valve 219-S-WT-V-5355 to SY-101" CLOSE green light is LIT and OPEN red light is no longer LIT.

_____ 5.7.63 **DELIVER** the following to the 222-S FWS

- Completed Data Sheet 2 to the FWS for records retention.
- Key for "Motor Operated Valve 219-S-WT-V-5355 to SY-101."

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Transfer from 219-S TANK-102 to 241-SY-101

5.8 Tank Farms Base Operations Personnel Perform Post Shutdown Operations

- _____ 5.8.1 **WHEN** notified by 222-S Laboratory of shutdown of transfer pump **RECORD** time 219-S operations stopped transfer pump and opened siphon valve HV-305 on Data Sheet 3.
- _____ 5.8.2 **AFTER** all material has transferred and liquid levels do not change in tank 241-SY-101, **CONFIRM** 219-S personnel have completed shut down transfer valving.
- _____ 5.8.3 **USE** radio or other available communication system to make a general announcement stating "Transfer from 219-S Tank-102 to 241-SY-101 has shutdown".
- _____ 5.8.3.1 **CONFIRM** the following personnel received transfer-Stop announcement:
- Shift Manager
 - IH&S
 - RadCon
 - All other appropriate personnel as determined by OE.
- _____ 5.8.4 **IF** final shutdown, **RECORD** actual time and date transfer pump was stopped on material balance Data Sheet 3.
- _____ 5.8.5 **IF** pump is shutdown on an intermediate bases, **RECORD** time and date transfer pump was stopped on Data Sheet 8.
- _____ 5.8.6 **IF** pump shutdown is due to abnormal circumstances, **NOTIFY** Shift Manager/OE to evaluate situation and determine whether to continue with transfer or pursue an alternate course of action.

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Transfer from 219-S TANK-102 to 241-SY-101

5.8 Tank Farms Base Operations Personnel Perform Post Shutdown Operations (Cont.)

- _____ 5.8.7 IF transfer is shutdown greater than 72 hours **GO TO** Section 5.9.
- _____ 5.8.8 IF continuing with transfer, **PERFORM** the following:
 - _____ 5.8.8.1 **CONFIRM** all alarms associated with Checklist 3 checks for this transfer are CLEAR.
 - _____ 5.8.8.2 IF administrative lock has been re-established **GO TO** Section 5.3.
 - _____ 5.8.8.3 IF administrative lock has not been re-established **GO TO** Section 5.5.
- _____ 5.8.9 IF transfer is complete, **OBTAIN AND RECORD** final temperature data on Data Sheet 5.
 - _____ 5.8.9.1 IF thermocouples are not reporting **CONSULT** Tank Farm System engineer before proceeding with transfer.
- _____ 5.8.10 IF transfer is complete,

OR

IF directed by Shift Manager/OE, **GO TO** Section 5.9.

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Transfer from 219-S TANK-102 to 241-SY-101**5.9 Install Administrative Lock**

- _____ 5.9.1 **AFTER** 222-S Laboratory personnel make notification valve CA-V-6607 has been closed, **OBTAIN** Shift Manager authorization to install administrative lock, **AND**
- INSTALL** administrative lock condition on valve CA-V-6607 for 219-S transfer pump in per TFC-OPS-OPER-C-22. (IHP-1266 5.B)
- _____ 5.9.2 **IF** continuing with transfer and administrative lock has been re-established, **GO TO** Section 5.3.

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Transfer from 219-S TANK-102 to 241-SY-101**5.10 Perform Post-Transfer Activities**

- _____ 5.10.1 **PERFORM** post flush radiological surveys per RadCon monitoring plan.
- _____ 5.10.2 **OBTAIN AND RECORD** final data in "FINAL" column on Data Sheet 3.
- _____ 5.10.3 **IF** not previously done, **OBTAIN AND RECORD** final temperature monitoring data on Data Sheet 5. (OSD-T-151-00007)
 - _____ 5.10.3.1 **IF** thermocouples are not reporting **CONSULT** Tank Farm System engineer before proceeding with transfer.
- _____ 5.10.4 **PERFORM** post transfer radiological surveys per RadCon monitoring plan.
- _____ 5.10.5 **CONFIRM** Signature Sheet 1 is completed by all personnel who initialed and/or signed this procedure.

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Transfer from 219-S TANK-102 to 241-SY-101

Attachment 1 - 219-S Example Transfer Sheet (For Information Only)

[illegible]

APPENDIX KK

Return to operations manager at the end of each month.

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Transfer from 219-S TANK-102 to 241-SY-101

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Checklist 1 - Tank Farm Engineering Transfer Controls

TRANSFER LOG NUMBER:			
WCA RPP-RPT-#		Exp. Date	
Estimated volume of transfer (DST inches)			
Estimated Flush Volume (gallons)			
Waste compatibility assessment complete and evaluation requirements satisfied (AC 5.8.1, AC 5.9.1, AC 5.9.4)		Yes	<input type="checkbox"/>
		No	<input type="checkbox"/>
Flushing of transfer route required if transfer pump is shutdown for greater than 1 hour? Check (✓) here. (TFC-ENG-STD-26)		Yes	<input type="checkbox"/>
		No	<input type="checkbox"/>
Tank 241-SY-101 estimated final liquid level (inches) (Operating limit -406" per WCA-RPP-RPT-45794)			
Tank 219S-102 estimated final liquid level (inches)			
COMMENTS:			
Engineer Signature/ Date:			

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Transfer from 219-S TANK-102 to 241-SY-101

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Checklist 1 - Tank Farm Engineering Transfer Controls (Cont.)

TRANSFER LOG NUMBER:	
Design pressures of the PHYSICALLY CONNECTED safety-significant waste transfer primary piping systems, HIHTL primary hose assemblies, and isolation valves for double valve isolation are equal to or greater than the highest waste transfer system pressure (SAC 5.8.5)	Yes <input type="checkbox"/> No <input type="checkbox"/>
Leak Path evaluation complete per TFC-ENG-FACSUP-C-26 and technical recommendations are incorporated into transfer procedure. (AC 5.7)(SI02 CAP)	Yes <input type="checkbox"/> No <input type="checkbox"/>
DST Induced GRE Evaluation specifies that ventilation is required during, and for 7 days following the completion of, the waste transfers into receiving DSTs. (SAC 5.8.1, LCO 3.4)	Yes <input type="checkbox"/> No <input type="checkbox"/>
Flammable Gas Ignition Control Requirements Screening Checklist complete (AC 5.9.2)	Yes <input type="checkbox"/> No <input type="checkbox"/>
All physically connected components that comprise the primary confinement boundary are approved in the Safety Equipment Compliance Database (SECD)	Yes <input type="checkbox"/> No <input type="checkbox"/>
Maximum shutoff pressure of waster transfer pump:	≅ 125 psi @ SpG of 1.1
Transfer Pump Runout Flow rate	≅ 260 gpm
COMMENTS:	
Engineer Signature/ Date:	

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Transfer from 219-S TANK-102 to 241-SY-101**Checklist 2 - Re-Baselining for Out-of Specification MBD**

Review (✓)	Considerations
	Determine liquid level instruments for all tanks on direct pipeline path are functioning properly
	Review liquid levels for all tanks inter-connected to direct transfer line
	Review status of transfer line encasement and pit leak detectors that are inter-connected to and part of direct transfer line
	Determine if any liquid could have been added to either sending or receiving tank from another source (Drains, snow-melt, rain, water flush, line hold-up)
	Review radiation surveys of waste transfer line walk down
	Review waste tank history, waste compatibility assessment and past transfer data for any other potential MBD sources (i.e., gas retention, solids)
Prepared by SM/OE	Date
Sys Eng Review	Date
Sys Eng Approval	Date
Technical Basis for Re-baselining MBD:	
Actions Taken to Evaluate MBD:	
Sys Eng Approval	Date

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Transfer from 219-S TANK-102 to 241-SY-101

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Checklist 3 - Safety Basis and Environmental Equipment Checks

Cover Location	Operator Initials	Date Inspection Performed	Time Inspection Performed
Siphon Station 5350 System Cover (East of 244-S DCRT outside of S Complex fence) (AC 5.9.3)			
Siphon Station 5351 System Cover (East of 244-S DCRT outside of S Complex fence) (AC 5.9.3)			
Shift Manager/OE Review			

Checklist 3 CONTINUED ON NEXT PAGE

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Transfer from 219-S TANK-102 to 241-SY-101

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Checklist 3 - Safety Basis and Environmental Equipment Checks (Cont.)

			DATE:							
Instrument Nomenclature	Instrument Location	Calibrate*/ Functional Test Completed Initial	Operable* (+)		Operator Initial					
		Next Due Date	Y	N						
LEAK DETECTORS (RPP-16922)										
SY101-WT-LDE-152A/B (applicable Work Order**)	SY241-WT-ENCL-112 (North of 252-S)									
SY103-WT-LDE-153A/B (applicable Work Order**)	SY241-WT-ENCL-112 (North of 252-S)									
"ENCL PWR WHEN ILLUMINATED" window	SY241-WT-ENCL-112 (North of 252-S)	Light LIT								
SM/OE Review										
* See Section 2.1, for definition of "calibrate" and "operable" ** Record applicable Work Order number on Data Sheet 8										
COMMENTS:										

Checklist 3 CONTINUED ON NEXT PAGE

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Transfer from 219-S TANK-102 to 241-SY-101

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Checklist 3 - Safety Basis and Environmental Equipment Checks (Cont.)

Instrument Nomenclature	Instrument Location	DATE:								
		Calibrate*/ Functional Test Completed Initial	Operable* *** (+)		Operator Initial					
			Y	N						
ENCASEMENT LEAK DETECTORS (RPP-16922)										
SY101-WT-LDE-150A/B (applicable Work Order**)	SY241-WT-ENCL-112 (Riser 11, SY101)									
SY103-WT-LDE-151A/B (applicable Work Order**)	SY241-WT-ENCL-112 (Riser 2, SY103)									
S219-WT-LDSTA-154 (applicable Work Order**)	Northwest of 222-S Labs and southeast of SX (outside farms) Between siphon standpipe and MO-409									
S219-WT-LDSTA-155 (applicable Work Order**)	Northwest of 222-S Labs and southeast of SX (outside farms) Between siphon standpipe and MO-409									
S219-WT-LDSTA-156 (applicable Work Order**)	10' south of MO-409 near 222-S Labs									
S219-WT-LDSTA-157 (applicable Work Order**)	10' south of MO-409 near 222-S Labs									
SM/OE Review										
* See Section 2.1, for definition of "calibrate" and "operable" ** Record applicable Work Order number on Data Sheet 8 ***PERFORM a lamp/beacon check to ensure power is available										
COMMENTS:										

Checklist 3 CONTINUED ON NEXT PAGE

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Transfer from 219-S TANK-102 to 241-SY-101

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Checklist 3 - Safety Basis and Environmental Equipment Checks (Cont.)

			DATE:		
Instrument Nomenclature	Instrument Location	Calibrate*/ Functional Test Completed Initial	Operable* (+)		Operator Initial
		Next Due Date	Y	N	
LEVEL INDICATION					
SY101-WST-LIT-101 (WT-00526)	241-SY-101 Liquid Level Indicator (ENRAF)				
SY101-WST-LIT-102 (WT-03665)	241-SY-101 Liquid Level Indicator (ENRAF)				
SY103-WST-LIT-101 (WT-03667)	241-SY-103 Liquid Level Indicator (ENRAF)				
SM/OE Review					
* See Section 2.1, for definition of "calibrate" and "operable"					
COMMENTS:					

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Transfer from 219-S TANK-102 to 241-SY-101

Page 1 of 3

Data Sheet 1 - 219-S Transfer Signoff Sheet

Shipment Number:				
Item	Requirement	Print Name/Signature	Date	Time
4.3.2	Process Engineering has determined transfer meets all applicable compatibility criteria of HNF-SD-WM-OCD-015	222-S FWS		
4.3.2	Waste transfer has been approved	222-S FWS		
4.3.2	Check (✓) one Tank Farms Base Operations has _____ or has not _____ authorized post transfer flush	222-S FWS		
4.3.6	Section 4.3 has been completed	222-S FWS		
5.1.14	Record starting tank volume _____ gallons	222-S FWS		
5.1.15	Verify the building air compressors are available.	222-S FWS		
5.5.7	Tank Farm Base Operations gives approval to transfer ("PERMITTED" light on).	222-S FWS		
5.5.14	Start pump P-1	222-S FWS		

Data Sheet 1 CONTINUED ON NEXT PAGE

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Transfer from 219-S TANK-102 to 241-SY-101		

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Data Sheet 1 - 219-S Transfer Signoff Sheet (Cont.)

Shipment Number:				
Item	Requirement	Print Name/Signature	Date	Time
5.7.9	Stop pump P-1			
		222-S FWS		
5.7.10	Record final tank volume _____ gallons			
		222-S FWS		
5.7.11	Record gallons transferred _____			
		222-S FWS		
5.7.30	Record starting tank volume _____ gallons			
		222-S FWS		
5.7.33	Verify "PERMITTED" light is on.			
		222-S FWS		
5.7.38	Start pump P-1			
		222-S FWS		
5.7.53	Record stop time _____ and gallons _____			
		222-S FWS		
5.7.54	Record final tank volume _____ gallons			
		222-S FWS		

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Data Sheet 1 - 219-S Transfer Signoff Sheet (Cont.)

Shipment Number:				
Item	Requirement	Print Name/Signature	Date	Time
5.7.55	Total volume of transfers _____ gallons			
		222-S FWS		
5.7.56	Notify Tank Farms of Gallons Transferred _____			
		222-S FWS		
5.7.57	Request Tank Farms move HS-302D to DENY position			
		222-S FWS		
5.7.58	Tank transfer completed ("PERMITTED" light OFF).			
		222-S FWS		
5.7.59	Notify Tank Farms valve CA-V-6607 is CLOSED and admin lock can be installed			
		222-S FWS		
5.7.61	Motor-operated valve 219S-WT-V-5355 (CLOSED)			
		222-S FWS		

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Transfer from 219-S TANK-102 to 241-SY-101		

Data Sheet 2 - 219-S Transfer to Tank 241-SY-101

	Sheet	of	Initials:
	START	STOP	N/A
Date/Operator Initials:			N/A
Time/Operator Initials (5.5.14, 5.7.9):			N/A
219-S-102 Volume (gallons) (5.1.14)		N/A	
219-S-102 Volume (gallons) 5.7.10	N/A		
Total Volume (gallons) Transferred (5.7.11)	N/A		
219-S-102 Volume Prior to Flush (gallons) (5.7.30):		N/A	
Flush Date/Operator Initials (5.7.38, 5.7.53):			N/A
Flush Time/Operator Initials (5.7.38, 5.7.53):			N/A
219-S-102 Volume After Flush (gallons) (5.7.54):	N/A		
Total Volume Flush (gallons) (5.7.55):	N/A		N/A
Total Volume Waste + Flush Transferred (gallons) (5.7.55):	N/A		
222-S FWS Initials:			N/A

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Transfer from 219-S TANK-102 to 241-SY-101

Data Sheet 3 – 241-SY Start/Final Material Balance

		Sheet		of	
		START		END	
Date:					
Time:					
219-S-102 Volume (gallons)*					
219-S-102 Volume (DST inches = gallons ÷ 2750)		A =		A =	
241-SY-101 Liquid Level (inches) <i>Limit - MAXIMUM 406"</i>		D =		D =	
*Flush Volume (DST inches= Gallons/2750)		C=0		C=	
Material Balance (inches) (MB) = A + D-C =		E =		G =	
Final Material Balance (inches) (FMBD) = G – E		N/A		FMBD =	
Actual pump start: Time and Date:		Actual pump stop Time and Date:			
Operator Initials:					
MBD Review		Shift Manager/OE Initials:			
Allowable MBD during Transfer = ± 1.0 inches or 2750 gallons. Allowable Final MBD = ± 0.5 inches or 1375 gallons. * Readings obtained from 219-S Operations					

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Transfer from 219-S TANK-102 to 241-SY-101		

Data Sheet 4 – 241-SY Intermediate Material Balance

Actual START Time & Date (From Data Sheet 3)						Page	
Restart Time/Date		+ ____ Hours	+ ____ hours	+ ____ Hours	+ ____ hours	+ ____ hours	+ ____ hours
	Date:						
	Time:						
219-S-102 Volume (gallons)*							
219-S-102 Volume (DST inches = gallons ÷ 2750)		A =	A =	A =	A =	A =	A =
241-SY-101 Liquid Level (inches) <i>Limit - MAXIMUM 406"</i>		D =	D =	D =	D =	D =	D =
Flushing during transfer: *Flush volume (gallons ÷ 2750) + C _{previous} = C		C =	C =	C =	C =	C =	C =
Material Balance (inches) = A + D – C		F =	F =	F =	F =	F =	F =
MBD inches = F – E <div style="border: 1px solid black; padding: 2px; display: inline-block;"> (From Data Sheet 3) E= </div>		MBD =	MBD =	MBD =	MBD =	MBD =	MBD =
Flow (GPM) = (D _{current} - D _{previous}) (2750) ÷ Change in Time [minutes]							
Operator Initials:							
SM/OE Review (Initials):							
SM/OE Final Review (Sign & Date):							
Allowable MBD during Transfer = ± 1.0 inches or 2750 gallons. * Readings obtained from 219-S Operations							

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Transfer from 219-S TANK-102 to 241-SY-101

Data Sheet 5 – 241-SY-101 Riser 19 Temperature Monitoring

Page

Obtain the following manual readings once per shift and at end of transfer. Obtain manual field readings per TO-040-660.

SY101-WST-SS-102 (Riser 17C)		START					
DATE:							
TIME:							
SS position	Tank elevation inches						
5	52 ²						
10	148 ¹						
13	208 ¹						
16	244 ¹						
18	316 ¹						
20	392 ¹						
22	427 ³						
Operator Initials:							
SM/OE Review							

Limit 76°F maximum waste temperature. (Reference RPP-RPT-45794) If a temperature exceeds the maximum value, contact transfer OE to notify process engineering.

¹ Thermocouples taking liquid temperatures (Dependent upon liquid level as tank is filled)

² Thermocouple taking sludge temperature

³ Thermocouple taking vapor space temperature (will not be submerged during transfer operations)

If any thermocouple readings cannot be obtained **CONSULT** system engineer for recommendation(s).

If any monitored liquid temperature changes are greater than 10° F, contact Transfer OE to notify process engineering to determine if average bulk temperature has approached 10° F/hr OSD Limit. If temperature difference between any successive thermocouples is greater than 45° F, determine if solution/vapor interface has approached 55° F OSD Limit.

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Transfer from 219-S TANK-102 to 241-SY-101**Data Sheet 6 – Physically Connected Tank Liquid Level Monitoring**

Liquid Levels of Tanks Physically Connected to Transfer Route							Page _____
Actual Start Time/Date (From Data Sheet 3)							
Date:							
Time:							
Tank ID#	⁽¹⁾ Start	+ _____ Hours	+ _____ Hours	+ _____ Hours	+ _____ Hours	+ _____ Hours	+ _____ Hours
241-SY-103							
Operators Initials:							
SM/OE Review (Initials):							
SM/OE Final Review (Sign & Date):							
<p>Limits: Monitoring must be performed at 30 and 60 minutes following waste transfer initiation and less than or equal to every 3 hours thereafter until administrative lock is installed.</p> <p>An expected increase in liquid level greater than 0.3 inches in physically connected DSTs not part of direct transfer route is allowed if increase is due to an anticipated event provided volume of addition is known. Information regarding addition should be noted on Transfer Information Record Sheet. Upon completion of addition physically connected DST liquid level must be re-baselined. Refer to Step 5.6.7.</p> <p>⁽¹⁾ Initial "At Start" liquid level will be continued on "At Start" column of each new page needed.</p>							

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Transfer from 219-S TANK-102 to 241-SY-101

Data Sheet 7 – Excavation/Cover Walkdown

241-SY Excavation/Cover Walkdown

Page

Perform Visual inspection of transfer route (existing excavations previously inspected) and excavation activities within 5 feet of transfer route ONCE DAILY while administrative lock is removed. (1)

	Initial					
DATE:						
TIME:						
Operator Initials:						
SM/OE Review (Initials):						
SM/OE Final Review (Sign & Date):						
(1) IF any excavation is discovered at anytime within 5 feet of direct transfer route shutdown transfer per Step 5.6.5 AND NOTIFY Shift Manager.						

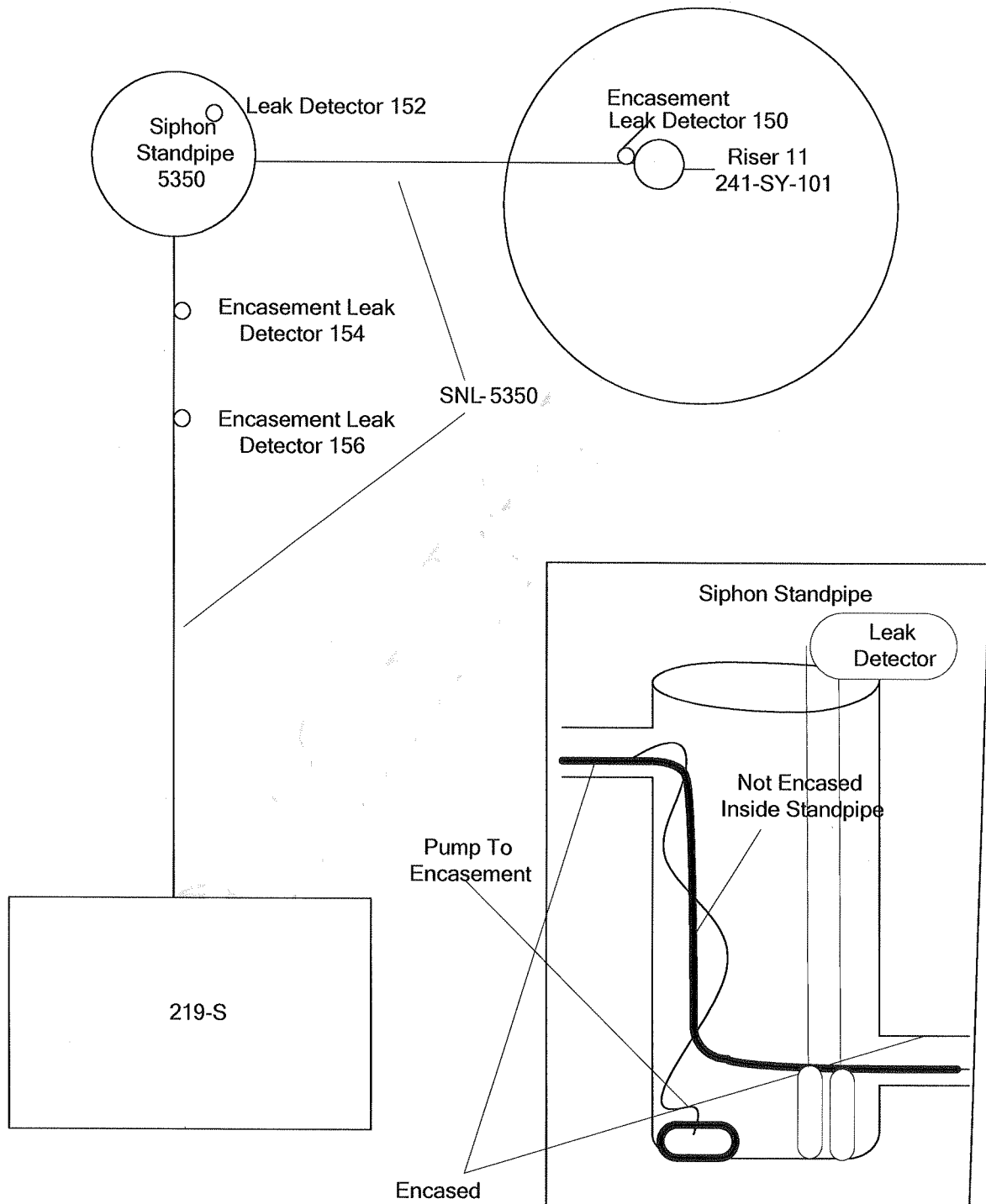
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Transfer from 219-S TANK-102 to 241-SY-101

Figure 1 - Transfer Route

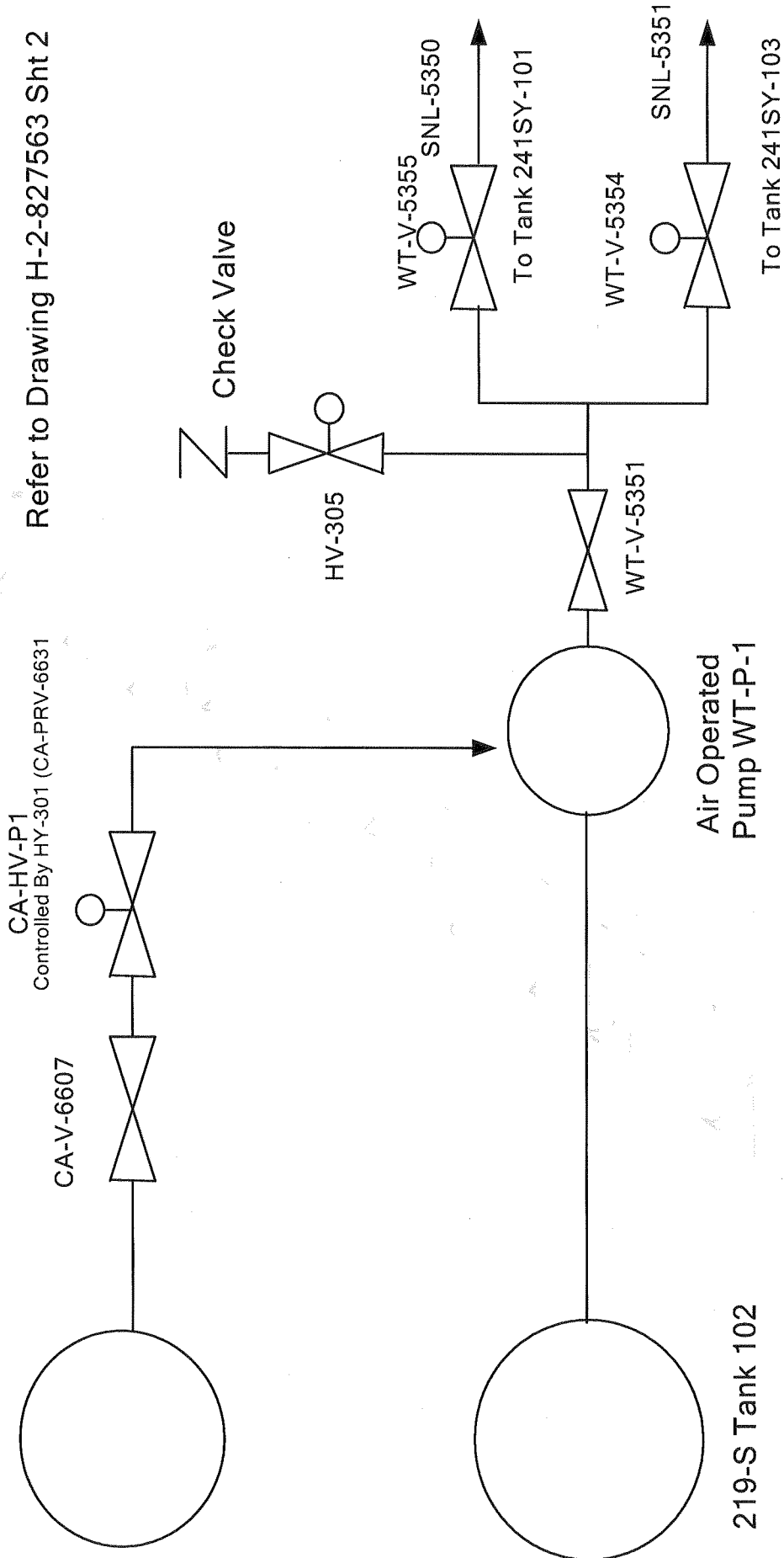


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Transfer from 219-S TANK-102 to 241-SY-101		

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Figure 2 – 219-S Valving

Air Compressor 219S



Refer to Drawing H-2-827563 Sht 2

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Transfer from 219-S TANK-102 to 241-SY-101**Table 1 – Transfer Shutdown Criteria For Tank Farm Operations**

General Alarms
Activation and lock-in of any alarms associated with instruments listed on Checklist 3
Tank Pressures
241-SY-101 high pressure alarm condition is verified by a tank pressure reading of greater than -0.5" W.G.
Liquid Levels
An unexpected increase in liquid level of greater than 0.3 inches in DSTs physically connected but not part of direct waste transfer route
241-SY-101 liquid level reaches a max working level of 406 inches or as specified on Checklist 1
219-S TK-102 liquid level does not show a decrease within 5 minutes after starting transfer pump
241-SY-101 liquid level does not show an increase within 20 minutes after starting transfer pump
Tank Temperatures
241-SY-101 maximum liquid waste temperature exceeds 76°F
MBD
MBD for this transfer exceeds allowable ± 1.0 inches of MBD
Cover Blocks
Any waste transfer associated structure covers physically connected with transfer route are discovered removed or inoperable
Ventilation
Loss of 241-SY farm primary ventilation system as indicated by 241-SY-101 tank pressure reading of greater than -0.5" W.G.
Loss of 241-SY VTP system record sampler as indicated by low flow condition
Radiation Readings
Monitoring limits are exceeded as defined in RadCon Monitoring Plan
IH Monitoring
Monitoring limits are exceeded as defined in IH Monitoring Plan
Excavation
Physically connected line is found excavated within 5 feet of transfer line without cover or facility worker protection measures in place

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Transfer from 219-S TANK-102 to 241-SY-101**Table 2 – Transfer Shutdown Criteria for 219-S Operations**

Tank, Sump, and Pump Alarms (Activation and lock-in of below alarms)	
High Level Alarms for Tank 101 or 104	
Alarms for Sumps 6, 7, 8 or 9	
Alarm for P-1 Pump Diaphragm Leak	
SY 101 or SY103 Transfer line leak detectors	
Utilities	
Loss of power	
Loss of compressed air	
Tank Liquid Level and Specific Gravity	
Loss of dip tube operability	
Liquid Levels	
An unexpected increase in liquid level of greater than 100 gallons in Tank 101, Tank 102, or Tank 104	
219 S TK 102 liquid level does not show a decrease within approximately 5 minutes after starting transfer pump	
Tank Temperature	
TK-102 liquid bulk waste temperature exceeds 125°F	
Ventilation	
Loss of 219-S tank ventilation system (including record sampler)	

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Transfer from 219-S TANK-102 to 241-SY-101**Table 3 - Excavation Inspection Drawing List**

Reference Drawings for Excavation Evaluations				
Farm	Line	Reference	End point A, Nozzle	End Point B, Nozzle
SY	SNL-5350	H-2-820831-1, H-2-820832-1, H-2-820835-1-3, H-2-827563-2, H-14-020831-6	219-S	101-SY riser 11
SY	SNL-5351	H-2-820831-33, H-2-820835-1-3, H-14-020831-6, H-2-827563-2	219-S	103-SY riser 002
These drawings are to assist Operations personnel in determining if any excavations that are discovered during transfer activities are within five (5) feet of transfer line(s) being used.				

All participating personnel shall enter their printed name, signature and initials below.

[illegible]

222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

222-S Laboratory Laboratory Operating Procedure

Technical Authority: GJ Hammitt
Review Designation: E,J, R, S, W

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Revision Status

Change Level	Date	Change Document	Pages	Description
G-0	08/18/98	N/A	All	Reformat and add HPT coverage.
H-0	03/22/90	N/A	All	Incorporate requirement for HPT survey at completion of work activities. Convert to MS Word.
H-1	09/29/99	N/A	All	Allow for disposal down 11A to 219S.
H-2	10/26/99	N/A	All	Change reference of WMH-310, 4.6, Radiological Fume Hood Use to reference LO-161-003, Waste Management Laboratory Fume Hood Use.
H-3	11/22/99	N/A	6	Add procedure step caveat.
H-4	01/17/2000	N/A	14	Correct step 6.6.4
I-0	11/12/2001	N/A	All	Incorporated SO 98-014. Procedure reformatted into Word Perfect 9.0
J-0	5/30/2002	N/A	All	Amended step 6.1.4; indicated throughout the document that waste is transferred to 219-S.
K-0	6/20/2002	N/A	10	Change required to utilize funnel for ALARA purposes
L-0	10/28/2002	N/A	All	Clarified Step 6.2.12 and Step 6.2.15; replaced the term "logbook" with "notebook" where necessary.
L-1	1/7/2003	N/A	All	Reassigned tasks previously performed by the Shift Operations Manager
M-0	4/8/2003	N/A	All	Replaced the term logbook with notebook where necessary. Clarified disposal of sample preps and waste bottles.
N-0	01/28/2004	N/A	All	Update references and responsibilities and clarify the proper approvals needed. Changed step verbiage in section 6.0 (instructions).
N-1	08/24/2004	N/A	All	Update responsibilities, instruction steps, and document management; add records verbiage
N-2	11/22/2004	N/A	All	Records modification to match ATS-310, Section 6.4.4; update section 6.1
O-0	04/27/2005	N/A	All	Add requirements for flushing lines, segregating waste types, and use of standpipes when transferring wastes
P-0	04/30/2007	NA	All	Periodic review; revise to reflect ATS ownership; change title and TA; update review designator and references

222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

Rev/Mod	Issue Date (Released for Training)	Effective Date (Released for Use)	Pages	Description
P-1	NA	12/16/2008	1, 8, 23	Administrative/editorial change to update Tank Operations Contractor (TOC) organizational elements of management directive TFC-MD-061, which also serves as authorizing change mechanism for this revision.
Q-0	NA	02/05/2009	All	Incorporate addition of caustic to drain line; add flush prior to addition of waste to drain line per corrosion review; update records box; add "J" designation
R-0	06/03/2009	07/22/2009	All	Revised procedure to incorporate recommendations made by corrosion review. New technical authority was assigned. Updated references; changed RCT to HPT. Other format changes were made per ATS-310, Section 11.16.2.
S-0	09/15/2009	09/28/2009	All	Added direction to turn air valve on/off for use and criteria for air pressure at valve. Clarified location and callout for slurp air isolation valve. Added section 7.0 for reagents. Added Waste Stream Fact Sheet and updated references. This revision is considered a complete re-write.
S-1	N/A	09/30/2009	All	Added reference LO-161-003 for the Analytical Services Production Contractor employees to use when referring to ATS-LO-161-003.
T-0	08/02/2010	08/17/2010	Various	Modification to work steps and clarification of responsibilities. Remove references to ATL procedure LO-161-003. Fix minor formatting errors. Update Records section to new format. Completed Periodic Review.

222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

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1.0 PURPOSE AND SCOPE

This procedure describes the process of transferring radioactive and/or mixed liquid wastes to the 219-S Tank System. This stream is composed of liquid samples and aqueous waste generated within the 222-S Laboratory or other similar wastes from other Hanford facilities as discussed in the ATS-310, Section 6.4, "222-S Laboratory Complex Waste Management Program." On a case-by-case basis, some samples that are transferred to the 219-S Tank System are from sample portions that have been sent to an offsite laboratory for analyses and have been returned to the Hanford Site for further management.

2.0 SOURCES

2.1 Requirements

ATS-310, Section 6.4, "222-S Laboratory Complex Waste Management Program."

TFC-BSM-IRM_DC-C-02, *Records Management*

2.2 References

ATS-LO-100-151, *Laboratory Waste Generation*

ATS-LO-161-003, *Fume Hood use in the Radiological Controlled Laboratory*

3.0 PRECAUTIONS AND LIMITATIONS

Containers with a reading greater than 500 mrem/hr shallow dose at contact are transferred using an air-motivated aspirator and a transfer hose found in hood #16 in room 2B or poured into hot cell drains for transfer to the 219-S Tank System. The air-motivated aspirator method of transfer is termed slurping.

Discharge detergent decontamination solutions separately from waste or samples.

Do not drain sinks 16A and 16B at the same time, as this may cause backup.

Sample carriers to be slurped are collected in designated sample storage cells in room 2B. Carriers are then slurped of liquid waste by a trained chemical technologist.

The term "sample" in this procedure means unused, unchanged sample portions. Samples, when originating in Tank 102, DST system, or the SST system are sample returns and not waste.

Flushing with water shall consist of a minimum of 10 minutes to prevent degradation to the tank system piping or components and to prevent reaction of any waste during the transfer operation.

Any change in the performance of the sink drains should be noted and reported to Facility Operations for evaluation and inclusion in the facility logbook, if warranted.

Frequent surveys should be performed to prevent the spreading of contamination and to ensure Radiological Work Permit (RWP) limiting conditions are not exceeded.

Latex surgeons' gloves provide splash protection only for chemical hazards. If chemicals are contacted, change gloves immediately. Deliberate contact with chemicals needs to be evaluated for the chemical and duration of contact.

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Lead lined gloves are to be used in accordance with the applicable RWP.

A maximum of 91 kg (200 lb) may be loaded onto a cart or dolly at any time. Maximum loads are:

- 40 single sample carriers
- 6 mini-pigs (13.6 kg each)
- Any combination of carriers not to exceed 91 kg can be loaded onto the dolly.

Follow procedure ATS-LO-100-151, to move liquid waste from hoods to room 2B. The Health Physics Technician (HPT) will establish all dose rates on samples for slurping and pouring operations.

3.1 Responsibilities

- 3.1.1 (222-S Laboratory Working Lead) **OBTAIN** approval from Facility Operations Manager (FOM) before any aqueous waste is transferred to 219-S.
- 3.1.2 (222-S Laboratory transfer personnel) **FILL** out Attachment A "222-S Laboratory Waste Transfer to 219-S via Room 2B Hood 16".
- 3.1.3 (FOM) **CHECK** that adequate volume exists in the 219-S tank system to accommodate any addition or transfer of aqueous waste and flush water to the tank system.
- 3.1.4 (Analytical manager or designee) When a transfer from TK-104 is completed, **RESET** the running solids in the 222S laboratory waste transfer sheet (Attachment A) to zero.
- 3.1.5 (Assigned analytical manager or designee) **VERIFY** waste for transfer to 219-S system has been approved.
- 3.1.6 (222-S Laboratory slurp & pour personnel) **REPORT** and **DOCUMENT** any change in operation of the sink or drain (i.e., slow drain, etc.) to FOM.
- 3.1.7 All waste expired and/or unusable reagents/standards must be approved by Environmental and the assigned manager prior to transfer to 219-S.
- 3.1.8 Laboratory engineering will give written approval for transfers from material balance areas (MBAs) and non-reportable fissionable material storage areas to the 219-S tank system.

4.0 SPECIAL TOOLS, EQUIPMENT, AND MATERIALS

- Approved waste container
- Beta/gamma, alpha count rate instruments
- Cap remover
- Dose rate instrument
- Diaper paper
- Disposable sleeves
- Disposable plastic arm sleeves
- Funnel

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- Gloves, lead-lined, latex, or nitrile
- Masking tape
- 222-S Laboratory Waste Transfer Sheet Attachment A (aqueous waste, container inventory)
- Plastic apron
- Plastic bags - various sizes
- Riser pipe for sink drain
- Sample dolly/cart
- Slurp rinse bucket (beaker or cut plastic carboy)
- Steel wool soap pad
- Tweezers
- Water

5.0 PREREQUISITES

Minimum training requirement for personnel performing this procedure is Resource Conservation and Recovery Act (RCRA) 24-Hr Hazardous Waste Training and training required by the 222-S Laboratory Complex Dangerous Waste Training Plan.

Techniques for safe manual lifting should be reviewed before starting the job. Physical limitations of assigned personnel should be addressed for compatibility with the lifting demands of the tasks.

Obtain/verify current copy of "222S Expired and/or Unused Standards and Reagents Approved for Transfer to the 219S Tank System" Copies maintained on the 222-S Laboratory Environmental Web Page.

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6.0 INSTRUCTIONS

NOTE

Sections 6.2 through 6.6 of this procedure may be performed out of sequence, as required, however, step 6.3 must be performed prior to 6.5 through 6.6.

6.1 Approving and Recording Aqueous Waste Transfers to 219-S

WARNING

Currently, no transfers of reportable quantities of fissionable materials are allowed to the 219-S facility without written approval from laboratory Engineering.

- 6.1.1 (Working Lead) Before transferring the liquid waste to the 219-S tank system, **VERIFY** the following:
- a. FOM has verified adequate tank space in the 219-S system.
 - b. Analytical manager or designee has verified the waste is approved for transfer to the 219-S system.
 - c. Appropriate approval documentation is provided for waste or sample.
- 6.1.2 (Laboratory Personnel) **RECORD** the following information in Attachment A for approved liquid wastes:
- a. Date of transfer
 - b. Names of transfer personnel
 - c. Waste generation location or sample ID - use one of the following:
 - Room and hood/procedure WSFS# (if applicable) or
 - Standards Laboratory ID# or
 - Sample ID # or
 - Sample Disposal List date
 - Barcode number
 - d. **IF** any containers have Standards Laboratory barcodes, **CONTACT** Standards Laboratory to remove the item from the facility chemical inventory.
 - e. Approximate volume poured based on the volume of the container.
 - f. **ENTER** any other pertinent information in the comments section (i.e., specific listed waste codes or reason for rejection).
- 6.1.3 (Laboratory Personnel) **IF** a Waste Planning Checklist was used, **PERFORM** the following.
- a. **VERIFY** that Environmental has approved waste for transfer to 219-S.
- 6.1.4 (Analytical Manager) **IF** an approval letter issued by Environmental is used:
- a. **SIGN** and **DATE** each entry for containers transferred to 219-S (this is the Pour Record).

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b. **PROVIDE** a copy to the Analytical Project Management (APM).

6.1.5 (Analytical Manager) (Solids Total) **ESTIMATE** the volume of solids, rounded up to the nearest 5 mL, in each 22 mL vial removed from the carrier for transfer to 219-S. This estimate can be based on the approximate height of the solids in the vial, relative to the height of the vial.

NOTE

IF there are no visible solids, a solid volume of zero **MAY BE USED** as the estimate.

a. **IF** the volume of solids cannot be estimated (for example, if they are not settled, or the material is opaque), **ASSUME** the entire volume is solids, for the purpose of this estimate.

b. **RECORD** solid volume in milliliters (mL), and update the running total.

c. **IF** the running total reaches 3000 mL or an approved higher limit, **NOTIFY** the FOM and
DO NOT PROCESS any more vials containing solids.

d. **ZERO** out the running solids volume total after each confirmed transfer of 219-S TK 104 contents.

e. **RECORD** total volume of transferred liquids.

f. **RECORD** estimated volume of rinses and flushes.

g. **IF** a container is rejected, **NOTE** the reason in the comment section of Attachment A.

6.1.6 (Analytical Manager) **IF** a Waste Stream Fact Sheet was used:

a. **VERIFY** that no prohibited listed waste codes (i.e., F-039, U-, P- listed wastes).

6.1.7 (Analytical Manager) **IF** Sample Inventory List was used:

a. **VERIFY** that Analytical Project Management has approved the sample for transfer to 219-S as a sample return.

b. **SIGN** and **DATE** the list.

c. **PROVIDE** sample inventory list to Analytical Project Management.

6.1.8 (Analytical Manager) **IF** there are irregularities with any waste container approval, **CONTACT** the Environmental Representative for a resolution.

6.1.9 (Analytical Manager) **PRINT AND SIGN** entry for containers transferred to 219-S into Attachment A.

NOTE

Procedure ATS-LO-161-003 is to be followed when working in hood 16 in room 2B.

6.2 Pouring Low-Level (< 500 mrem/hr shallow dose at contact), Radioactive Liquid Waste or Mixed Waste

6.2.1 **PREPARE** hood for waste transfer:

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- a. **REQUEST** HPT verify dose rate is < 500 mrem/hr shallow dose at contact.
- b. **DON** a plastic apron and disposable arm sleeves if not already performed.
- c. **TURN** water isolation valve PW-V-401, located at the backflow preventer to ON, if not already performed.
- d. **PLACE** containers, which are to be poured, on a cart next to the hood.
- e. **ESTABLISH** solid waste containers to segregate waste.
- f. **IF** working with a large number of small containers (each < 500 mrem/hr shallow dose at contact), **ATTACH** a plastic bag to the side of the hood next to the arm port.
- g. **SEGREGATE** waste containers into two categories: acid (acidic) wastes and neutral/basic wastes.
- h. **INSTALL** riser pipe plugs in deep sink(s) being used for the pour process for one or both the 16A and 16B sides of the hood as needed.
- i. **INSTALL** a strainer/strainer screen during sink operations.

CAUTION

The foot pedal air isolation valve shall be turned slowly to prevent damage to the pressure regulator. The foot pedal air isolation valve and pressure regulator valve are located approximately 6 feet high at the northeast corner of the hood. Foot pedals will not operate properly without adequate air pressure. The air pressure gauge is located on the pressure regulator valve.

- 6.2.2 **IF** sinks have not been set up, **PERFORM** the following:
- a. **TURN ON** foot pedal air isolation valve CA-V-8001 located on the northeast corner of the hood.
 - b. **ADJUST** pressure regulator valve CA-PRV-8003, if needed, to approximately 80 psi.

WARNING

The drain line system is maintained in a high pH state to reduce corrosion. Flushing is performed before the first waste addition to avoid an acid / base interaction.

- c. **TURN ON** flush water in sink.
 - d. **FLUSH** with water for a minimum of 10 minutes.
 - e. **TURN OFF** flush water in sink.
- 6.2.3 **IF** transferring sample preps: **GO TO** Section 6.6.
- 6.2.4 **BRING** the acid container into the hood first without contacting the hood surfaces.

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CAUTION

Liquid shall not be discharged into the drain from both sides of the hood simultaneously. Draining may only occur on one side at a time to prevent backup.

- 6.2.5 **REMOVE** the cap from the container to be poured.
- 6.2.6 **POUR** the contents into the funnel or sink drain (a riser pipe and funnel combination may be used to control sink contamination).
- 6.2.7 **PERFORM** triple rinse of the container with water, and **EMPTY** into the sink or funnel.
- 6.2.8 **PLACE** container in the bag at side of hood.
- 6.2.9 **REPEAT** steps 6.2.3 through 6.2.8 for each acid container.
- 6.2.10 **TURN ON** flush water in sink.
- 6.2.11 **FLUSH** sink with water for a minimum of 10 minutes.
- 6.2.12 **TURN OFF** flush water in sink.
- 6.2.13 **BRING** the neutral or basic container into the hood
- 6.2.14 **REMOVE** the cap from the container to be poured.
- 6.2.15 **POUR** the contents into the funnel or sink drain (a riser pipe and funnel combination may be used to control sink contamination).
- 6.2.16 **PERFORM** triple rinse of the container with water
- 6.2.17 **PLACE** container in the bag at side of hood.
- 6.2.18 **REPEAT** steps 6.2.13 through 6.2.17 for each neutral or base container.
- 6.2.19 **RINSE** the sink with water after all containers have been poured to rinse any residual waste liquid down the drain.
- 6.2.20 **FLUSH** lines with water for a minimum of 10 minutes.
- 6.2.21 **PERFORM** radiological survey of the work location in accordance with ATS-LO-161-003.
- 6.2.22 **REQUEST** HPT survey work area in accordance with the requirements of RWP.

WARNING

Steel wool soap pads and nitric acid react very rapidly and with splashing; to prevent burns or chemical reactions contact must be avoided.

- 6.2.23 **IF** the sink needs to be decontaminated,
 - a. **RINSE** the sink with dilute nitric acid.
 - b. **RINSE** the dilute nitric acid from the sink with water.
 - c. **SCRUB** the sink with steel wool soap pad.
 - d. **RINSE** the sink with water.

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- e. **CONTINUE** with this step until the sink is less than the RWP action level.
- f. **IF** this is the last evolution in the sinks for the day, **FLUSH** the system with water for a minimum of 10 minutes.
- 6.2.24 **IF** this is the last evolution in the sinks for the day, **POUR** 2 gallons of 0.5 M sodium hydroxide into the sink as a corrosion inhibitor.
- 6.2.25 **REMOVE** and **TRANSFER** apron and sleeves to waste container.
- 6.2.26 **PACKAGE** the waste in accordance with ATS-LO-100-151.
- 6.2.27 **TURN** water isolation valve PW-V-401 at the backflow preventer to OFF.
- 6.2.28 **IF** this is the last evolution in the sinks for the day, **TURN OFF** the foot pedal air isolation valve CA-V-8001 located on the northeast corner of the hood.
- 6.2.29 **NOTIFY** FOM that pouring is complete and water and air are OFF.
- 6.3 **Prepare to Slurp ≥ 500 mrem/hr Shallow Dose at Contact and Pour Sample Preps.**

WARNINGS

Pouring of liquids into the sinks is not permitted during slurping operations.

Air pressure to the slurper shall NOT exceed 40 psi. This is to prevent liquids from bubbling in the drains and reduce the potential for personnel and equipment contamination from air coming up the drains.

Solutions of fissile material must be approved by laboratory Engineering before transfer to the 219-S tank system.

- 6.3.1 **DON** plastic apron and disposable plastic arm sleeves.
- 6.3.2 **TURN** water isolation valve PW-V-401, located at the backflow preventer to ON.
- 6.3.3 **ESTABLISH** waste containers for the segregation of waste
- 6.3.4 **PLACE** grates over sinks where equipment will be placed.
- 6.3.5 **PLACE** a sheet of diaper paper on grates before placing carriers or waste bottles or sample preps in hood.

CAUTION

The foot pedal air isolation valve shall be turned slowly to prevent damage to the pressure regulator. The foot pedal air isolation valve and pressure regulator valve are located approximately 6 feet high at the northeast corner of the hood. Foot pedals will not operate properly without adequate air pressure. The air pressure gauge is located on the pressure regulator valve.

- 6.3.6 **IF** sinks have not been set up, **PERFORM** the following:
 - a. **TURN ON** foot pedal air isolation valve CA-V-8001 located on the northeast corner of the hood.
 - b. **ADJUST** pressure regulator valve CA-PRV-8003, if needed, to approximately 80 psi.

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WARNING

The drain line system is maintained in a high pH state to reduce corrosion. Flushing is performed before the first waste addition to avoid an acid/base interaction.

- c. **TURN ON** flush water in sink.
- d. **FLUSH** sink with water for a minimum of 10 minutes.
- e. **TURN OFF** flush water in sink.

WARNING

Lead-lined glove should be used when handling samples. Labels on samples do not necessarily indicate contact dose rates, dose rates may exceed safe handling resulting in increased levels of radiation exposure.

- 6.3.7 **PROCEED** to section 6.4 for dilution carriers, section 6.5 for mini-pigs, or section 6.6 for waste bottles and sample preps.

6.4 Slurp Dilution Carriers

WARNING

Samples that are greater than 500 mrem/hr shallow at contact are required to be slurped using lead-lined gloves for contact handling. Dose rates may exceed safe handling resulting in increased levels of radiation exposure.

- 6.4.1 **PLACE** a slurp rinse bucket (beaker or plastic 1-gallon container) in the sink.
- 6.4.2 **FILL** the slurp bucket approximately 1/4 full of water or dilute nitric acid.
- 6.4.3 **PLACE** a cart holding sample carriers to be slurped next to hood #16.
- 6.4.4 **PLACE** sample carrier in the hood on diaper paper.
- 6.4.5 **REMOVE** the lid from the carrier.
- 6.4.6 **REMOVE** vials from the carrier.
- 6.4.7 **REMOVE** cap from the vials, using tweezers or appropriate tools.
 - a. **IF** cap cannot be removed, **ASK** HPT to establish dose rates.
 - b. **USE** lead-lined gloves before contact handling.
- 6.4.8 **PLACE** vial in the slurp bucket.
- 6.4.9 **PLACE** the caps in waste container
- 6.4.10 **REPLACE** the lid on the carrier.
- 6.4.11 **REMOVE** the carrier from the hood.
- 6.4.12 **CONTINUE** until all carriers are empty.

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CAUTION

The slurp air isolation valve shall be turned slowly to prevent damage to the pressure regulator valve. The slurp air isolation valve is located approximately 6 feet high at the northeast corner of the hood. The slurp air pressure regulator valve is located approximately 1 foot high on the east side of the hood. The slurp wand will not operate properly without adequate air pressure. The air pressure gauge is located on the pressure regulator valve.

- 6.4.13 **IF** air isolation valve CA-V-8002 on northeast corner of hood is not on, **TURN ON** air isolation valve CA-V-8002.
- 6.4.14 **CHECK** air pressure is < 40 psi on pressure regulator valve CA-PRV-8004 located on the east side of the hood.
- 6.4.15 **PUSH** and **RELEASE** the slurper solenoid switch (OPEN/CLOSE) until the light comes ON.
- 6.4.16 **PLACE** slurp tip in the bucket.
- 6.4.17 **ADD** water to the slurp bucket as it becomes empty.
- 6.4.18 **EXAMINE** vials for remaining solid material.
- 6.4.19 **IF** solid material is still visible in the vials, **USE** a scrubbing utensil to remove material or allow it to soak longer in the bucket
- 6.4.20 **REMOVE** vials from slurp bucket using tweezers or appropriate tools, making sure no free liquids are in vials.
- 6.4.21 **PLACE** empty vials in waste container.
- 6.4.22 **REPEAT** steps 6.4.1 to 6.4.21 for remaining carriers to be slurped.

WARNING

Failure to rinse slurp lines with water and nitric acid will increase the dose rate levels.

- 6.4.23 **AFTER** all carriers have been slurped, **RINSE** the slurp lines as follows:
 - a. **SLURP** approximately 500 mL of diluted nitric acid to clean out the line.
 - b. **SLURP** approximately 500 mL of water to rinse the line.
- 6.4.24 **VERIFY** the dose rate in accordance with ATS-LO-161-003.
- 6.4.25 **REPEAT** steps 6.4.23 and 6.4.24 until a dose rate < 10 mrem/hr window open uncorrected is achieved at hood arm ports, as directed by management.
- 6.4.26 **PERFORM** a self-survey.
- 6.4.27 **PUSH** and **RELEASE** the slurper solenoid switch (OPEN/CLOSE) until light goes OFF.
- 6.4.28 **PERFORM** a radiological survey of work location in accordance with ATS-LO-161-003.
- 6.4.29 **REQUEST** HPT to survey work area in accordance with the applicable RWP.

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WARNING

Steel wool soap pads and nitric acid react very rapidly and with splashing; to prevent burns or chemical reactions contact must be avoided.

- 6.4.30 **IF** the sink needs to be decontaminated,
- RINSE** the sink with dilute nitric acid.
 - RINSE** the dilute nitric acid from the sink with water.
 - SCRUB** the sink with steel wool soap pad.
 - RINSE** the sink with water.
 - CONTINUE** with this step until the sink is less than the RWP action level.
 - IF** this is the last evolution in the sinks for the day, **FLUSH** the system with water for a minimum of 10 minutes.
- 6.4.31 **IF** this is the last evolution in the sinks for the day, **POUR** 2 gallons of 0.5 M sodium hydroxide into sink.
- 6.4.32 **REMOVE** and **PLACE** apron and sleeves in waste container.
- 6.4.33 **PACKAGE** the waste in accordance with ATS-LO-100-151.
- 6.4.34 **TURN** water isolation valve PW-V-401, at the backflow preventer to OFF.
- 6.4.35 **IF** this is the last evolution in the sinks for the day, **TURN OFF** the foot pedal air isolation valve CA-V-8001 located on the northeast corner of the hood.
- 6.4.36 **NOTIFY** FOM that pouring is complete and water and air are OFF.

6.5 Slurp Mini-Pigs
WARNING

Samples that are greater than 500 mrem/hr shallow at contact are required to be slurped using lead-lined gloves for contact handling. Dose rates may exceed safe handling resulting in increased levels of radiation exposure.

- 6.5.1 **PLACE** a slurp rinse bucket in sink.
- 6.5.2 **FILL** the slurp bucket approximately 1/4 full of water.
- 6.5.3 **PLACE** the cart holding mini-pigs next to hood #16.
- 6.5.4 **PLACE** and **TRANSFER** tags from mini-pigs to waste container.

WARNING

Mini-pigs are heavy, improper lifting techniques can cause back injury.

- 6.5.5 **PLACE** the mini-pig in the hood.
- 6.5.6 **REMOVE** the lock pin from mini-pig.
- 6.5.7 **LIFT OFF** lid and place on diaper paper.

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- 6.5.8 **REMOVE** the bottles from the mini-pig using tweezers or appropriate tools.
- 6.5.9 **REMOVE** cap from the bottle, using tweezers or appropriate tools.
 - a. **IF** caps cannot be removed, **ASK** HPT to establish dose rates.
 - b. **USE** lead-lined gloves before contact handling.
- 6.5.10 **PLACE** cap in waste container.
- 6.5.11 **PLACE** the bottle in the slurp bucket.

CAUTION

The slurp air isolation valve shall be turned slowly to prevent damage to the pressure regulator valve. The slurp air isolation valve is located approximately 6 feet high at the northeast corner of the hood. The slurp air pressure regulator valve is located approximately 1 foot high on the east side of the hood. The slurp wand will not operate properly without adequate air pressure. The air pressure gauge is located on the pressure regulator valve.

- 6.5.12 **IF** air isolation valve CA-V-8002 on northeast corner of hood is not on, **TURN ON** air isolation valve CA-V-8002.
- 6.5.13 **CHECK** air pressure is < 40 psi on pressure regulator valve CA-PRV-8004 located on the east side of the hood.
- 6.5.14 **PUSH** and **RELEASE** the slurper solenoid switch (OPEN/CLOSE) until the light comes ON.
- 6.5.15 **PLACE** the slurp tip in the bucket.
- 6.5.16 **ADD** water to the slurp bucket as it becomes empty.
- 6.5.17 **EXAMINE** vials for remaining solid material, **USE** a scrubbing utensil to remove material or allow to soak longer in bucket.
- 6.5.18 **REMOVE** bottles from slurp bucket using tweezers or appropriate tools, making sure no free liquids are in bottles.
- 6.5.19 **PLACE** empty bottles in waste container.
- 6.5.20 **REPEAT** steps 6.5.5 to 6.5.19 for remaining mini-pigs to be slurped.

WARNING

Failure to rinse slurp lines with water and nitric acid will increase the dose rate levels.

- 6.5.21 **AFTER** all mini-pigs have been slurped, **RINSE** the slurp lines as follows:
 - a. **SLURP** approximately 500 mL of nitric acid to clean out the line.
 - b. **SLURP** approximately 500 mL of water to rinse the line.
- 6.5.22 **VERIFY** the hood dose rate in accordance with ATS-LO-161-003.
- 6.5.23 **REPEAT** steps 6.5.21 and 6.5.22 until a dose rate of < 10 mrem/hr window open uncorrected is achieved at hood arm ports, as directed by management.
- 6.5.24 **PERFORM** a self-survey.

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- 6.5.25 **PUSH** and **RELEASE** the slurper solenoid switch (OPEN/CLOSE) until the light goes OFF.
- 6.5.26 **PERFORM** a radiological survey of the work location in accordance with ATS-LO-161-003.
- 6.5.27 **REQUEST** HPT to survey work area in accordance with applicable RWP.

WARNING

Steel wool soap pads and nitric acid react very rapidly and with splashing; to prevent burns or chemical reactions contact must be avoided.

- 6.5.28 **IF** the sink needs to be decontaminated,
- a. **RINSE** the sink with nitric acid.
 - b. **RINSE** the nitric acid from the sink with water.
 - c. **SCRUB** the sink with steel wool soap pad.
 - d. **RINSE** the sink with water.
 - e. **CONTINUE** with this step until the sink is less than the RWP action level.
 - f. **IF** this is the last evolution in the sinks for the day, **FLUSH** the system with water for a minimum of 10 minutes.
- 6.5.29 **IF** this is the last evolution in the sinks for the day, **POUR** 2 gallons of 0.5 M sodium hydroxide into sink for corrosion control.
- 6.5.30 **REMOVE** and **TRANSFER** sleeves and apron to waste container.
- 6.5.31 **PACKAGE** the waste in accordance with ATS-LO-100-151.
- 6.5.32 **TURN** water isolation valve PW-V-401, at the backflow preventer to OFF.
- 6.5.33 **IF** this is the last evolution in the sinks for the day, **TURN OFF** the foot pedal air isolation valve CA-V-8001 located on the northeast corner of the hood.
- 6.5.34 **NOTIFY** FOM pouring is complete and water and air are OFF.
- 6.6 Slurp Waste Bottles and Pour Sample Preps**
- 6.6.1 **SEGREGATE** waste containers into acid waste and basic wastes.
- 6.6.2 **PLACE** the cart holding the waste bottles or sample preps next to hood #16.
- 6.6.3 **PLACE** the same waste type waste bottles or sample preps into hood.
- 6.6.4 **REMOVE** cap from the bottle, using tweezers or appropriate tools.
- a. **IF** cap cannot be removed, **ASK** HPT to establish dose rates.
 - b. **USE** lead-lined gloves before contact handling.
- 6.6.5 **PLACE** caps or stoppers in the waste container.
- 6.6.6 **POUR** liquid from sample preps into the funnel, or **PLACE** waste bottle in sink.
- a. **IF** pouring sample preps, proceed to Step 6.6.11

222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

CAUTION

The slurp air isolation valve shall be turned slowly to prevent damage to the pressure regulator valve. The slurp air isolation valve is located approximately 6 feet high at the northeast corner of the hood. The slurp air pressure regulator valve is located approximately 1 foot high on the east side of the hood. The slurp wand will not operate properly without adequate air pressure. The air pressure gauge is located on the pressure regulator valve.

- 6.6.7 **IF** air isolation valve CA-V-8002 on northeast corner of hood is not on, **TURN ON** air isolation valve CA-V-8002.
- 6.6.8 **CHECK** air pressure is < 40 psi on pressure regulator valve CA-PRV-8004 located on the east side of the hood.
- 6.6.9 **PUSH** and release the slurper solenoid switch (OPEN/CLOSE) until the light comes ON.
- 6.6.10 **SLURP** waste from bottle.
- 6.6.11 **RINSE** the bottle with approximately 10 percent of the container volume with nitric acid, if solids or residue are present.
- 6.6.12 **SLURP** or pour nitric acid from waste bottles, if required.
- 6.6.13 **RINSE** each bottle with approximately 10 percent of the container volume with water three times.
- 6.6.14 **SLURP** or **POUR** water from the waste bottles or sample preps into funnel.
- 6.6.15 **REPEAT** steps 6.6.3 through 6.6.15 until all waste bottles or sample preps have been slurped.
- 6.6.16 **FLUSH** lines with water for a minimum of 10 minutes.

WARNING

Failure to rinse slurp lines with water and nitric acid will increase the dose rate levels.

- 6.6.17 **IF** any containers have been slurped, **RINSE** the slurp lines as follows:
 - a. **SLURP** approximately 500 mL of dilute nitric acid to clean out the line.
 - b. **SLURP** approximately 500 mL of water to rinse the line.
- 6.6.18 **VERIFY** the dose rates in accordance with ATS-LO-161-003.
- 6.6.19 **IF** the dose is greater than 10 mrem/hr window open uncorrected at the arm ports, **PERFORM** steps 6.6.18 and 6.6.19, as directed by management.
- 6.6.20 **PERFORM** a self-survey.
- 6.6.21 **PUSH** and **RELEASE** the solenoid switch (OPEN/CLOSE) until the light goes OFF.
- 6.6.22 **PERFORM** a radiological survey of the work location in accordance with ATS-LO-161-003.
- 6.6.23 **REQUEST** HPT to survey work area.

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222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

WARNING

Steel wool soap pads and nitric acid react very rapidly and with splashing, to prevent burns or chemical reactions contact must be avoided.

- 6.6.24 **IF** the sink needs to be decontaminated,
- a. **RINSE** the sink with dilute nitric acid.
 - b. **RINSE** the dilute nitric acid from the sink with water.
 - c. **SCRUB** the sink with steel wool soap pad.
 - d. **RINSE** the sink with water.
 - e. **CONTINUE** with this step until the sink is less than the RWP action level.
 - f. **IF** this is the last evolution in the sinks for the day, **FLUSH** the system with water for a minimum of 10 minutes.
- 6.6.25 **IF** this is the last evolution in the sinks for the day, **POUR** 2 gallons of 0.5M sodium hydroxide into sink.
- 6.6.26 **REMOVE** and **TRANSFER** sleeves and apron to waste container.
- 6.6.27 **PACKAGE** the waste in accordance with ATS-LO-100-151.
- 6.6.28 **TURN** water isolation valve PW-V-401, at the backflow preventer OFF.
- 6.6.29 **IF** this is the last evolution in the sinks for the day, **TURN OFF** the foot pedal air isolation valve CA-V-8001 located on the northeast corner of the hood.
- 6.6.30 **NOTIFY** FOM that pouring is complete and water and air are OFF.

7.0 REAGENTS

Sodium Hydroxide (NaOH) .5M Technical Grade or Better

As received from the manufacturer or may be prepared by the Standards Laboratory. Store in a plastic container. Expiration is 6 months.

Nitric Acid (HNO₃) ACS Reagent Grade

As received from the manufacturer. Expiration is 5 years from receipt date.

8.0 DOCUMENT MANAGEMENT

- After the completion of all waste transfer activities, fax or submit the waste transfer sheet to the 222-S Environmental Field Representative and place a “convenience copy” in a binder in the 2B TSD cabinet for future reference.
- Special approvals for transfer from Environmental can be found on the 222-S Environmental web page. After waste is transferred, the listing of containers is signed and dated and becomes the record of waste transfer to the 219-S TSD. The Pour Record is faxed to APM in MO-409 after every slurp and pour evolution.

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222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

9.0 RECORDS

The following records are generated during the performance of this procedure.

- Sample Inventory List
- Attachment A
- Pour Record from Environmental Letter

The record custodian identified in the TOC Company Level Records Retention and Disposition Schedule (RIDS), is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

10.0 BIBLIOGRAPHY

ATS-LO-100-166, *222-S Laboratory Management of 222-S Laboratory Waste Management Areas*

RPP-29498, *Waste Analysis Plan for the 222-S Dangerous and Mixed Waste Treatment, Storage, and Disposal Unit*

WAC 173-303, *Dangerous Waste Regulations*

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222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

Table 1. 222-S Laboratory Waste Stream Fact Sheet

<input checked="" type="checkbox"/> Liquid Waste				<input type="checkbox"/> Solid Waste	
CONSTITUENTS OF WASTE GENERATED				CAS NUMBER	APPROXIMATE WEIGHT %
Nitric Acid				7697-37-2	100%
Reagent Water				7732-18-5	100%
Sodium Hydroxide				1310-73-2	100%
Soap from SOS Pads				014266 (MSDS)	.001%
Waste Codes	Disposal Path	Major Risk	Waste Container	Flash Point	pH
D002	219-S	Corrosive	None	N/A	<2 and >12.5

Comments: These products are directly added to 219-S and are not containerized.

Waste Stream Type	Waste Stream Number	Page Number
Aqueous	1 of 1	1 of 1

222-S Laboratory Waste Transfer at Hood 16 in Room 2B to the 219-S Tank System

NEIC VP0928E01

Attachment A. 222-S Waste Transfer to 219-S via Room 2B Hood 16

Transfer Date

Sheet _____ of _____

APPENDIX KK

[illegible]

Starting Solids _____ mL Final Solids _____ mL (not to exceed 3000 mL)

Volume of Liquid Transferred _____ Liters Estimated volume of rinses and flushes _____ Liters

Verification of Transfer Approvals _____ Print/Sign _____

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

222-S Laboratory Laboratory Operating Procedure

Technical Authority: HL Baune

Review Designation: E,S,R

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Revision Status

Rev/Mod	Issue Date (Released for Training)	Effective Date Released for Use)	Pages	Description
L-0	NA	02/13/2008	4, 12, 13, 15	Update organization titles and records box; revise placement of Warning; add Note for neutralization; review for critical tasks (none per TA)
M-0	12/29/2008	01/05/2009	All	Update procedure for HMI based on PrHA; implement TFC-MD-061 organization changes
M-1	NA	12/14/2009	Various	Administrative/editorial change to update Tank Operations Contractor (TOC) organizational elements of management directive TFC-MD-061, which also serves as authorizing change mechanism for this revision.
N-0	01/06/2011	01/06/2011	Various	Rename Reference Section to Sources and add sub steps. Revise Records Section format. Remove J designator. Added steps for rinsing of sampling line. Completed periodic review.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

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1.0 PURPOSE AND SCOPE

This procedure provides the instructions for treating the radioactive liquid wastes stored in 219-S Tank 102. This procedure also provides the methods to obtain the samples needed for analyses before shipping to the Tank Farms (TFs). The analytical results are used to ensure the waste to be shipped is within the parameters of the applicable waste profile sheet.

The waste collected in the 219-S Tank 102 must be analyzed to meet transportation and TF specifications, whether it is transferred by pipeline or tanker truck. The tank contents also must be made alkaline and treated with sodium nitrite (NaNO_2) to protect the tanks and lines. To achieve this, a sample of the contents is analyzed by the laboratory to determine the sodium hydroxide (NaOH) required to be added to the tank to bring it to a pH between 12 and 14 and the amount of NaNO_2 to be added to make the molarity greater than 1.1×10^{-2} (500 $\mu\text{g/mL}$) or as requested by TFs. After addition of the chemicals to the tank, a "post" sample is taken and analyzed to ensure the proper amounts have been added. Corrections are then made to the tank chemistry as necessary.

2.0 SOURCES

2.1 Requirements

ATS-310, *222-S Laboratory Administration*, Section 6.4, "222-S Laboratory Complex Waste Management Program"

ATS-LO-090-101, *222-S Laboratory Sample Receiving and Custodianship*

TFC-BSM-IRM_DC-C-02, *Records Management*

2.2 References

ATS-LO-090-103, *222-S Laboratory Labeling Sampling Carriers*

ATS-LO-100-151, *Laboratory Waste Generation*

ATS-LO-110-129, *Generation of Nonradioactive Waste and Recyclable Materials*

3.0 PRECAUTIONS AND LIMITATIONS

For each shipment to TFs, the waste must be within the parameters of the approved waste profile sheet. Generators may use more than one approved waste profile sheet for separate waste shipments.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

Quantities of NaOH and NaNO₂ to be added to Tank 102 for treatment are determined by a 222-S analytical chemist based on the analytical results from the initial tank sampling. Further treatment may be required if the acceptance standard is not met. Additional treatment quantities are determined by the chemist based on analytical results from the post treatment tank sampling.

Addition of large quantities of NaOH to acid solution may create spot boiling in the tank. The tank agitator must be operating during neutralization to prevent spot heating or boiling.

All waste generated within the sample gallery sample hood is to be managed as "mixed" waste in accordance with procedure ATS-LO-100-151.

The work crew performing this procedure in the 219-S Sample Gallery shall be composed of at least 2 people. In the event of an emergency, the second person can summon help using the telephone, activating the 219-S emergency assistance alarm or contacting the BED by other means.

Personnel can be exposed to radiation, contamination, and corrosive chemicals when sampling. If personnel are exposed, the following apply.

- If a sample is spilled or contamination spread occurs, notify the Health Physics Technician (HPT) and facility operations management (FOM).
- A telephone is located in the operating gallery. An emergency HELP button is located in the sample gallery.
- Safety showers are located outside the 219-S building along the north side and behind the instrument panel in the operating gallery.
- If a sample comes in contact with the skin, flush it off with water for 15 minutes, and notify HPT, FOM, and supervision. Proceed with containment and cleanup as directed by the HPT and FOM.
- Portable eyewash station will be located on the north side of 219-S near the operating gallery/conference room doors.

4.0 SPECIAL TOOLS, EQUIPMENT, AND MATERIALS

Obtain the following tools, material, and equipment.

Acid suit

Absorbent paper

Chemical goggles

Dose rate and count rate instruments

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102
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Eyewash station (portable)

Face shield

Gloves, chemical-resistant

Grab air sampler, 47 mm media, and envelope

Plastic bag

Radioactive material labels

Rod

Rubber matting

Rubber stopper assembly

Sample and Treat Liquid Waste Checklist

Sample containers as per the Chain of Custody (COC)

Sample pump

Tape

Tubing, rubber

Water

5.0 PREREQUISITES

Ensure Radiological Control is notified two weeks (or as early as reasonably possible) of planned initial sampling to update ALARA Management Worksheet (AMW) survey data.

As practicable, a two-week notification shall be given to the Tank Operations Contractor (TOC) Process Control before initial sampling.

Ensure Generator Knowledge Form (GKF) has been submitted before sampling.

A prejob safety briefing shall be completed and include a review of the AMW and Radiological Work Permit (RWP); tools and supplies needed to perform the work shall be available at the job site.

Obtain shipment number for inclusion on the Sample and Treat Liquid Waste Checklist.

Obtain a Chain of Custody (COC) (Site Form A-6003-962)

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

Before performing tank sampling or tank treatment activities, electricians must be contacted to turn on the tank AGITATOR M2 electrical disconnect switch.

Ensure portable eye wash station has been staged within 50 feet or 10 seconds.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

6.0 INSTRUCTIONS

6.1 Sample Tank 102

NOTE

If sampling for polychlorinated biphenyls (PCBs) only, use rinsed glass sample bottles. Do not use poly bottles or safety coated glass.

- 6.1.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).
 - a. **ENSURE** top portion is completed by operations lead or FOM.
- 6.1.2 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that waste sampling will be performed.
 - a. **DOCUMENT** notification on checklist.
- 6.1.3 **ENSURE** electrician has placed the tank AGITATOR M2 electrical disconnect switch in the ON position.
- 6.1.4 In the Operating Gallery, **START** Tank 102 agitator (AGITATOR M2).
 - a. **PRESS** START button.
 - b. **VERIFY** the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing the action.
 - c. **AGITATE** tank for 45 minutes.
- 6.1.5 **BEFORE** entering the sample gallery, **START** the exhaust fan for the sample hood.
 - The exhaust fan START button is located at the entry to the sample gallery.

WARNING

Radiological exposure hazards exist while sampling.

- 6.1.6 **REQUEST** HPT to set up and start grab air sampling.
- 6.1.7 **REQUEST** HPT determine contamination levels and dose rate at sample box.
- 6.1.8 **VERIFY** the sample riser is capped.
- 6.1.9 **TURN** the air to the sample jet ON.

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- 6.1.10 **CIRCULATE** sample air for five minutes.
- 6.1.11 **ENSURE** the pump is set up as follows.
- IF** new tubing is required, **CUT** tubing to length (approximately 1 meter).
 - POSITION** tubing in the pump head.
 - ATTACH** the tubing to the rubber stopper assembly.
- 6.1.12 **TURN** the air to the sample jet OFF.
- 6.1.13 **REMOVE** sample riser cap.
- 6.1.14 **REQUEST** HPT to perform contamination surveys on tubing and stopper, if previously used.
- 6.1.15 **PLACE** tubing with rubber stopper in sample port to prevent contamination spread.
- 6.1.16 **TURN** the air to the sample jet ON.
- 6.1.17 **PLACE** the outlet of the tubing into a sample bottle.

<p style="text-align: center;">CAUTION</p> <p>Until the sample bottle has some weight of sample in it, the pumping action on the tubing may cause the bottle to tip over if not held.</p>
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- 6.1.18 **POSITION** poly bottle and tubing in hand.
- 6.1.19 **TURN** pump ON.
- ADJUST** jet airflow to obtain sample flow.
 - MOVE** speed control on the peristaltic pump to maximum until liquid appears in the tubing.
 - ADJUST** the pump speed, as required, to fill the bottle.
 - REQUEST** HPT to perform intermittent dose rates on bottle while filling.
 - IF** liquid cannot be obtained,
 - TURN** the air to the sample jet OFF, and
 - RESEAL** the rubber stopper.

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- f. **IF** the tubing appears to be collapsed or otherwise faulty, **REPLACE** before proceeding.

1. **REPEAT** steps 6.1.16 through 6.1.19.e.

NOTE

Step 6.1.20 may be performed at the discretion of the FWS or Cognizant Engineer.

6.1.20 **IF** the sample cannot be obtained,

- a. **ENSURE** air to sample jet is OFF.
- b. **REMOVE** rubber stopper/tubing assembly in sample port.

CAUTION

The sample assembly may be damaged if excessive force is used.

- c. **ROD** sample line with 1/15" rod or wire using a gentle up and down motion.
- d. **REMOVE** rod from sample line and **WIPE** rod as it is removed from sample line.
- e. **REQUEST** HPT to perform contamination surveys on rod.
- f. **PLACE** tubing with rubber stopper in sample port to prevent contamination spread.

6.1.21 **IF** the sample cannot be obtained,

- a. **TURN** the air to the sample jet ON.
- b. **REMOVE** cap from bottle of rinse water with approximately 1 L of water.
- c. **PLACE** the outlet of the tubing into rinse water bottle.

CAUTION

As the rinse water bottle is emptied, the pumping action of the tubing may cause the bottle to tip over if not held.

- d. **POSITION** rinse water bottle and tubing in hand.
- e. **REVERSE** the direction of the pump to empty the rinse water bottle into the sampler.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

- f. **TURN** the pump ON.
- g. **MOVE** speed control on the peristaltic pump to maximum until water is removed from rinse water bottle.

CAUTION

Water may back up in tubing if pumped too quickly into sample line.

- h. **ADJUST** the pump speed, as required, to empty the rinse water bottle.
 - i. **TURN** the pump OFF.
 - j. **TURN** the air to the sample jet OFF.
 - k. **REPEAT** steps 6.1.21.a through 6.1.21.j up to two times for a total of 3 L water as directed by FWS or Cognizant Engineer.
 - l. **REPEAT** steps 6.1.16 through 6.1.19.e to obtain a sample.
 - m. **IF**, the sample cannot be obtained, **NOTIFY** operations lead or FOM.
- 6.1.22 **AFTER** a sufficient volume of liquid has been drawn in accordance with the COC requirements, **PERFORM** the following substeps.
- a. **ADJUST** the speed control to minimum.
 - b. **RAISE** the tubing from bottle
 - c. **CAP** the bottle.
 - d. **REPEAT** steps 6.1.19.a through c and 6.1.22.a through c to fill additional sample bottles as required by the COC.
 - e. **REVERSE** the direction of the pump to clear the tubing.
 - f. **TURN** the pump OFF.
 - g. **REMOVE** cap from bottle of water with approximately 1L water.
 - h. **PLACE** the outlet of the tubing into rinse water bottle.

CAUTION

As the rinse water bottle is emptied, the pumping action on the tubing may cause the bottle to tip over if not held.

- i. **POSITION** rinse water bottle and tubing in hand.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

- j. **REVERSE** the direction of the pump to empty the rinse water bottle into the sampler.
- k. **TURN** the pump ON.
- l. **MOVE** speed control on the peristaltic pump to maximum until water is removed from rinse water bottle.

CAUTION

Water may back up in tubing if pumped too quickly into sample line.

- m. **ADJUST** the pump speed, as required, to empty the rinse water bottle.
- n. **TURN** the pump OFF.
- o. **PLACE** sample end of tubing in an empty bottle.
- p. **TURN** the air OFF.
- q. **REMOVE** tubing from pump head.
- r. **REMOVE** tubing from stopper assembly.
- s. **REQUEST** HPT perform survey of tubing.
- t. **PLACE** tubing in bag.
- u. **DISCARD** tubing if survey limits are exceeded
- v. Using proper bag out technique, **PULL** the stopper assembly from the sampler.
 - 1. BAG,
 - 2. TAPE,
 - 3. LABEL, and
 - 4. STORE for future use.

6.1.23 **REPLACE** the cap on the sample riser.

- a. **MANAGE** waste in accordance with ATS-LO-100-151.
- b. **SURVEY** the work area.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

- 6.1.24 **BEFORE** transporting the sample to laboratory or the waste for disposal, **REQUEST** HPT to survey and determine the sample dose rate(s) and label in accordance with ATS-LO-090-103.

NOTE

The following step may be worked out of sequence.

- 6.1.25 **ENSURE** copy of radiological survey report data is provided to the 222-S radiological planner.
- 6.1.26 **PERFORM** a final check of the area to verify air jet is off, capped, and area is cleaned up.
- 6.1.27 **UPON** leaving the sample gallery, **TURN OFF** the sample hood exhaust fan.
- 6.1.28 In the Operating Gallery, **TURN OFF** "AGITATOR M2" by pressing the STOP button.

NOTE

The following step may be worked out of sequence.

- 6.1.29 **REQUEST** electrician to place the tank AGITATOR M2 electrical disconnect switch in the OFF position.
- 6.1.30 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that sampling is complete
- a. **DOCUMENT** notification on checklist
- 6.1.31 **TRANSPORT** the sample with the COC and RSA to the laboratory for analysis.
- 6.1.32 GIVE completed and signed checklist to FOM as a record copy.

6.2 Treat Tank 102 with Sodium Hydroxide (NaOH)

- 6.2.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).

NOTES

- Step 6.3 may be used instead of this section.
- This work may be performed in conjunction with step 6.4.1.

- a. **ENSURE** the top portion is completed by FOM.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

6.2.2 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that waste treatment is being performed.

- a. **DOCUMENT** notification on checklist.

NOTE

The tank agitator must be operating during neutralization to prevent spot heating or boiling.

6.2.3 **ENSURE** electrician has placed the tank AGITATOR M2 electrical disconnect switch in the ON position.

6.2.4 **START** Tank 102 agitator (AGITATOR M2).

- a. **PRESS** the START button.
- b. **VERIFY** that the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing action.

6.2.5 **CONFIGURE** valves for addition of NaOH from Tank 201 to Tank 102 (see Figure 1).

- a. **VERIFY** closed raw-water main supply valve (RW-V-2005).
- b. **VERIFY** sodium nitrite valves (WT-V-1008 and WT-V-1009) are closed.
- c. **OPEN** valve (WT-V-1006) to Tank 102.

6.2.6 **RECORD** “start” time and “before” gallons on the Tank 102 and Tank 201 Transfer Sheets.

6.2.7 **OBSERVE** the “Tank 201 Gallons” level indicator (WT-LIT-201).

- a. **OPEN** the NaOH supply valve (WT-V-1005) to add NaOH.
- b. **ALLOW** the necessary quantity per the Sample and Treat Liquid Waste in Tank 102 Checklist to drain into the tank,
1. **CLOSE** valve WT-V-1005.

6.2.8 **OPEN** raw water main supply valve (RW-V-2005) one-fourth turn for 30 seconds to flush the NaOH from the feed lines.

6.2.9 **CLOSE** the raw water main supply valve (RW-V-2005).

6.2.10 **CLOSE** valve (WT-V-1006) to Tank 102.

6.2.11 **TURN OFF** AGITATOR M2 by pressing the STOP button.

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6.2.12 **RECORD** “stop” time and “after” gallons on the Tank 102 and Tank 201 Transfer Sheets.

NOTE

The following step may be worked out of sequence.

6.2.13 **REQUEST** electrician to place the tank AGITATOR M2 electrical disconnect switch in the OFF position.

6.2.14 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that the sodium hydroxide waste treatment is complete.

a. **DOCUMENT** notification on checklist.

6.2.15 **GIVE** completed and signed checklist to FOM as a record copy.

6.3 Treat Tank 102 with Sodium Hydroxide (NaOH) from Drum

6.3.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).

NOTE

This work section may be performed instead of step 6.2.

a. **ENSURE** the top portion is completed by FOM.

6.3.2 **NOTIFY** the lab leader or FOM monitoring alarms in room 3B (373-2425) that waste treatment is being performed.

a. **DOCUMENT** notification on the checklist.

6.3.3 **VERIFY** Chemical Addition drum is empty.

6.3.4 **STAGE** the sodium hydroxide (NaOH) and equipment in 219-S Operating Gallery.

6.3.5 **PROVIDE** secondary containment for NaOH container.

6.3.6 **ASSEMBLE** the peristaltic pump and tygon tubing to be used for the transfer.

6.3.7 **DON** the acid suit, chemical goggles, chemical-resistant gloves, and face shield.

6.3.8 **OPEN** the NaOH container and Chemical Addition drum.

6.3.9 **INSERT** the tygon tubing.

6.3.10 **PUMP** the volume of NaOH into Chemical Addition drum.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

- 6.3.11 **RECORD** the volume and concentration of NaOH pumped into Chemical Addition drum on the Sample and Treat Liquid Waste Transfer Checklist.
- 6.3.12 **IF** the entire contents of the NaOH container is transferred, **DISPOSE** of the tubing and NaOH container in accordance with ATS-LO-110-129.
- 6.3.13 **IF** the NaOH container is not empty,
- a. **REMOVE** the tygon from the container, and
 - b. **PLACE** in a bag for disposal in accordance with ATS-LO-110-129.
 - c. **STORE** NaOH container and pump for future use.
- 6.3.14 **REMOVE** protective clothing.
- 6.3.15 **PERFORM** housekeeping of the general area.

NOTE

The tank agitator must be operating during neutralization to prevent spot heating or boiling.

- 6.3.16 **ENSURE** electrician has placed tank AGITATOR M2 electrical disconnect switch in the ON position.
- 6.3.17 **START** Tank 102 agitator (AGITATOR M2).
- a. **PRESS** the START button.
 - b. **VERIFY** the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing action.
- 6.3.18 **RECORD** “start” time and “before” gallons on the Tank 102 Transfer Sheet.
- 6.3.19 **ADD** sodium hydroxide (NaOH) to Tank 102.
- a. **OPEN** the valve (WT-V-1006) to Tank 102.
 - b. **OPEN** the two drum valves (WT-V-1008 and WT-V-1009).
 - c. **ALLOW** the drum to empty.
 - d. **WASH** out the drum with water.
 1. **ENSURE** the rinse water has drained from the drum.
 - e. **CLOSE** the two drum valves (WT-V-1008 and WT-V-1009).

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

f. **OPEN** the raw water main supply valve (RW-V-2005), 1/4 turn for 30 seconds to flush NaOH to Tank 102.

g. **CLOSE** raw water main supply valve (RW-V-2005).

6.3.20 **REPEAT** steps 6.3.3 through 6.3.19 as necessary to obtain appropriate amount of NaOH in accordance with Sample and Treat Liquid Waste Checklist.

a. **RECORD** stop time and gallon amount on the 219-S transfer sheets.

6.3.21 **PRESS** the STOP button to turn OFF AGITATOR M2.

NOTE

The following step may be worked out of sequence.

6.3.22 **REQUEST** electrician to place tank AGITATOR M2 electrical disconnect switch in the OFF position.

6.3.23 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that the sodium nitrite waste treatment is complete.

a. **DOCUMENT** notification on checklist.

6.3.24 **CLEAN** the area.

6.3.25 **RECORD** stop time and gallon amount on the 219-S transfer sheets.

6.3.26 **GIVE** completed and signed checklist to FOM as a record copy.

6.3.27 **IF** no additional tank treatment is required, **GO TO** step 6.5 for post-neutralization valve configuration.

6.4 Treat Tank 102 with Sodium Nitrite (NaNO₂) from Drum

6.4.1 **OBTAIN** Sample and Treat Liquid Waste Transfer Checklist (see Attachment 1).

NOTE

This work may be performed in conjunction with step 6.2.1.

a. **ENSURE** the top portion is completed by FOM.

6.4.2 **NOTIFY** the lab leader or FOM monitoring alarms in room 3B (373-2435) that waste treatment is being performed.

a. **DOCUMENT** notification on the checklist.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

WARNING

Inhalation of NaNO_2 dust may cause lung irritation, nausea, or headaches. Skin contact with NaNO_2 dust or liquid may cause chemical skin irritations.

6.4.3 **DON** acid suit, chemical goggles, chemical-resistant gloves, and face shield.

6.4.4 **PREPARE** sodium nitrite (NaNO_2) as follows.

- a. Using hose attached to valve RW-V-2006, **ADD** approximately 25 gallons of raw water to Chemical Addition drum (see Figure 1).
- b. **PLUG** in the drum agitator to start the agitator.
- c. **ADD** (slowly) the amount of NaNO_2 specified on the Sample and Treat Liquid Wastes in Tank 102 Checklist (but not more than ~ 25 pounds) to the drum.
- d. **RUN** the drum agitator until the mixture is uniformly mixed (approximately 90 minutes)
- e. **UNPLUG** the drum agitator to turn OFF the agitator.
- f. As needed, **DISPOSE** of the NaNO_2 container in accordance with ATS-LO-110-129.

6.4.5 **REMOVE** protective clothing.

NOTE

The tank agitator must be operating during neutralization to prevent spot heating or boiling.

6.4.6 **ENSURE** electrician has placed tank AGITATOR M2 electrical disconnect switch in the ON position.

6.4.7 **START** Tank 102 agitator (AGITATOR M2).

- a. **PRESS** the START button.
- b. **VERIFY** the agitator amp dial (WT-II-A-102) is cycling and the Tank 102 level indicator is showing action.

6.4.8 **RECORD** "start" time and "before" gallons on the Tank 102 Transfer Sheet.

6.4.9 **ADD** sodium nitrite (NaNO_2) to Tank 102.

- a. **OPEN** the valve (WT-V-1006) to Tank 102.

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- b. **OPEN** the two sodium nitrite valves (WT-V-1008 and WT-V-1009).
 - c. **ALLOW** the Chemical Addition drum to empty.
 - d. **WASH** out the Chemical Addition drum with water.
 - 1. **ENSURE** that the rinse water has drained from the Chemical Addition drum.
 - e. **CLOSE** the two sodium nitrite valves (WT-V-1008 and WT-V-1009).
 - f. **OPEN** the raw water main supply valve (RW-V-2005), 1/4 turn for 30 seconds to flush NaNO_2 to Tank 102.
 - g. **CLOSE** raw water main supply valve (RW-V-2005).
- 6.4.10 **REPEAT** steps 6.4.3 to 6.4.9 as necessary to obtain appropriate amount of NaNO_2 in accordance with Sample and Treat Liquid Waste Checklist.
- a. **RECORD** stop time and gallon amount on the 219-S transfer sheets.
- 6.4.11 **PRESS** the STOP button to turn OFF AGITATOR M2.

NOTE

The following step may be worked out of sequence.

- 6.4.12 **REQUEST** electrician to place tank AGITATOR M2 electrical disconnect switch in the OFF position.
- 6.4.13 **NOTIFY** lab leader or FOM monitoring alarms in room 3B (373-2435) that the sodium nitrite waste treatment is complete.
 - a. **DOCUMENT** notification on checklist.
- 6.4.14 **CLEAN** the area.
 - a. **PERFORM** final check of area.
- 6.4.15 **RECORD** stop time and gallon amount on the 219-S transfer sheets.
- 6.4.16 **GIVE** completed and signed checklist to FOM as a record copy.

6.5 Post-Neutralization Valve Configuration

- 6.5.1 **PERFORM** post-neutralization valve configuration as follows.
 - a. **VERIFY** NaOH supply valve (WT-V-1005) is CLOSED.

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102
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- b. **VERIFY** raw-water main supply valve (RW-V-2005) is CLOSED.
- c. **VERIFY** sodium nitrite valves (WT-V-1008 and WT-V-1009) are CLOSED.
- d. **VERIFY** valve (WT-V-1006) is CLOSED.
- e. **VERIFY** Tank 102 agitator is turned OFF.
- f. **VERIFY** Chemical Addition drum agitator is unplugged.

7.0 RECORDS

The following records are generated during the performance of this procedure.

- Sample and Treat Liquid Waste Checklist

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS), is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

8.0 BIBLIOGRAPHY

N/A

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222-S Laboratory Sample and Treat Liquid Wastes in 219-S Tank 102

Attachment 1. Sample and Treat Liquid Waste Checklist

Shipment Number	Page ____ of ____	
<i>NOTE: The top portion to be filled in by FOM</i>		
Tank:		
Activity to be performed:		
Approximate gallons of Sodium Hydroxide (NaOH) to be added:		
Pounds of Sodium Nitrite (NaNO ₂) to be added:		
Operations Supervisor/Delegate print/sign	Date:	
CHECKLIST		
Step Number	Action	Initial
6.1.2/6.2.2/6.3.2/6.4.2	Notified personnel monitoring alarms in room 3B – Task Starting	
6.1.28/6.2.11/6.3.21/6.4.11	Turned off agitator	
6.1.30/6.2.14/6.3.23/6.4.13	Notified personnel monitoring alarms in room 3B – Task Completed	
6.5	Configured the valves (post-neutralization)	
6.2.6/6.2.12/6.3.18/6.3.20/6.3.25/ 6.4.8/6.4.10/6.4.15	Recorded information on 219-S transfer sheets	
Operator: Print/sign		
Date/Time:		

The diagram illustrates the caustic tank system. It features a large cylindrical tank labeled "TANK 201 CAUSTIC TANK". An overflow line is shown at the top of the tank. A pump, labeled "RN-V-2005", is connected to the overflow line. Various valves are indicated by symbols: "WT-V-1000" is a valve on the left side of the tank; "WT-V-1001" is a valve on the bottom left of the tank; "WT-V-1005" is a valve on the bottom right of the tank; "WT-V-1006" is a valve on the bottom right of the tank; "WT-V-1007" is a valve on the right side of the tank; "WT-V-1008" is a valve on the right side of the tank; and "WT-V-1009" is a valve on the right side of the tank. A "WATER SUPPLY" line enters the bottom of the tank. A line labeled "TO TANK 102" exits the bottom of the tank. A "CHEMICAL ADDITION DRUM" is shown on the right side of the diagram.

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